Strategic Review of Innovation in the Payments System:
Issues for Consultation

JUNE 2011

Contents

ISBN 978-0-9871488-2-7 (Online)

1. Introduction

Throughout their existence, payments systems have undergone gradual change, with occasional periods of more rapid innovation. The pace of change has undoubtedly accelerated over the past three to four decades as rapid technological advances have come to bear on what were previously largely manual processes. These changes have seen consumers gain 24-hour access to cash and ready access to electronic payments at the point of sale, from their homes and offices, and now on the move via mobile devices. Merchants, billers, businesses and government agencies have gained access to efficient means of collecting revenue and distributing payments, through a variety of payment systems offering different mixes of real-time confirmation, easy reconciliation and bulk payment capabilities. Clearing of payments has moved from paper exchanges to exchanges of magnetic tapes and now electronic exchanges, with clearing times shortened correspondingly.

The evolution of payment systems over recent decades has undoubtedly provided considerable public benefit and is continuing to do so. However, with the rapid pace of change that is occurring globally, a reduced willingness or capacity to embrace innovation in any country is likely to leave it lagging significantly behind other countries and failing to avail itself of the benefits that are achievable. It is the aim of the Strategic Review of Innovation first to identify any areas where the Australian payments system may not currently be meeting the needs of end-users or may be at risk of lagging behind other countries in the next five to ten years.[1] Second, it aims to identify factors that may affect the environment for innovation in the Australian payments system. In other words, if there are current or emerging gaps in the payments system, what factors are preventing the necessary innovation in these areas? The focus of the Review is on 'retail' payment systems, meaning those systems typically used by consumers and most businesses. It does not consider high value payments, such as those relating to financial market transactions, or large corporate payments directed through the real-time gross settlement (RTGS) system.

This paper sets out some of the issues that have been raised during the relatively informal consultations that the Bank has conducted over the period since the Strategic Review was announced. It also draws on the output of a study of consumer payments behaviour undertaken by Roy Morgan Research on behalf of the Bank in late 2010 and on information on payments innovation globally arising from work facilitated by the Bank for International Settlements.[2] The paper will form the basis of a more structured consultation to occur over the coming months, and to that end identifies a number of specific questions for discussion. Based on that consultation process, the Payments System Board anticipates issuing final conclusions around the end of 2011 or early 2012.

1 The Strategic Review of Innovation in the Payments System was announced by the Payments System Board on 28 May 2010 (Media Release 2010-10), with further detail on the objectives and a call for initial stakeholder views issued on 22 July 2010 (Media Release 2010-14).

2 The study of consumer payments behaviour is published as a companion to this paper, see Bagnall, Chong and Smith (2011).

The remainder of this paper is structured as follows. Section 2 sets out the desirable attributes of retail payment systems and Section 3 provides a snapshot of Australian retail payments, based on the survey of consumer payments. Section 4 considers two areas where traditional payment methods are in decline. Section 5 examines the environment for innovation, with specific focus on governance in the payments system, followed by Section 6, which focuses on specific gaps that exist or may emerge in the payments system over the next five to ten years. Issues for discussion during the consultation phase of the review are presented in Sections 4 to 6. Section 7 outlines the early views and key priorities of the Board, arising from its discussions to date, and Section 8 sets out the next steps and provides information for those wishing to make a submission to the Strategic Review.

2. Objectives of an Efficient Payments System

A useful starting point for assessing potential gaps in the payments system is to establish a set of desirable attributes for such systems. This does not of course mean that each payment instrument must deliver all these attributes. But ideally the payments system overall would offer a mix of payment methods that collectively offer each of these attributes in a way that allows end-users – businesses, consumers and government – to meet their needs at a reasonable cost.

While not exhaustive, the following are some of the key attributes that can be important to end-users.

2.1 Attributes Valued by End-users

Timeliness

Not all payments are time-critical, but users of the system should at least have options available that provide timely payment. Timeliness has at least two elements. In some cases, such as emergency government payments, the timing of the availability of funds to the recipient is critical. In other cases, such as point-of-sale or online retail transactions, it is important that the merchant has immediate confirmation that the payment is on its way so that the transaction can be completed, even if the funds will not be available until some time later.

Accessibility

It is desirable that everyone who needs to make and receive payments should have ready access to the payments system. Once again this may have different elements. One is the ability to access the payments system when and where required. Cash, and more recently credit and debit cards, have provided ready access for face-to-face transactions, but 'remote' transactions have historically been more difficult, typically requiring the use of cheques or a visit to a bank branch. Innovations over recent years have of course dramatically improved access, with first telephone, then internet banking, and more recently mobile banking and payments.

Another element of accessibility is the availability of accounts on which payments can be made. Australia has a highly banked population, which means that access to bank-based payment methods is ubiquitous. In many lesser developed countries this is not the case. In some of these countries the introduction of mobile phone based payment systems has dramatically increased access to the payments system, even if one not necessarily based on banks.

Accessibility should not be thought of just in a domestic context. Many end-users have a need to make and receive payments across national borders.

Ease of use

It goes without saying that systems that are easier to use are preferable to those that are more cumbersome. But this is not just an issue of convenience. Systems that require manual entry of account and transaction details are prone to errors that can be costly to correct and can discourage use. That is one reason why payment cards are popular – because most of the need for manual entry is removed. The need to know a recipient's account details is another challenge for many payment instruments. One of our oldest payment methods – the cheque – deals with this by requiring only the recipient's name. The burden of course is placed on the recipient who must then manually deposit the cheque, providing their own account details. The challenge for electronic payment systems is to provide solutions that are easy for both the payer and the recipient.

Ease of integration with other processes

Payments are rarely made in isolation. Typically they are made as part of a process that requires some form of information exchange and reconciliation. Payment systems should be able to integrate efficiently with these processes. Key examples are the capacity of payment systems to carry additional information relevant to the payment and the ability of payment messages to be easily integrated with accounting and other business systems.

Safety and reliability

End-users of a payment system need to have confidence that the system will be available when expected and that payments will reach the intended recipient at the time promised. They also need to be confident that the system is secure, so that using it will not expose them to future losses as a result of information being fraudulently obtained. Some of these problems can be addressed by system participants providing a guarantee of one form or another, but good system design is a more fundamental solution.

Low and transparent prices

If two systems perform exactly the same function, users can be expected to prefer the cheaper one. However, each system typically has different attributes, and end-users make choices by weighing up those attributes and relative pricing. This means that both prices and the systems' attributes need to be transparent, so that those choices can be well informed. Given the two-sided nature of payment systems, this does not of itself guarantee economic efficiency because prices are often skewed in favour of the party with the greatest decision-making power. Pricing is most likely to be efficient where there is a reasonable alignment between the relative prices faced by those with decision-making power and the relative resource costs of different payment instruments.

2.2 Desirable Attributes for Payment System Design

The above attributes are those that are directly relevant to the end-users of payment systems. There are other attributes of the design of payment systems that are less obvious to end-users, but which are important to ensuring that payment systems are efficient and are well placed to deliver the sorts of attributes discussed above. These include the following.

Efficient design

Payment systems should be designed in a way that achieves the system's objectives in an efficient and cost-effective manner.

Security and robustness

The system should have a level of security and operational robustness commensurate with the importance of the system. For instance, disruption of a system delivering salary and social security payments can have widespread impacts, even if not considered to have implications for financial stability.

Interoperability

Payment systems should aim to achieve a high degree of interoperability with other systems. For instance, to the extent possible, message standards should be consistent with international standards to allow the easy flow of payments across borders and to simplify access for new entrants. It is also desirable to maximise the extent to which different payment systems can use common infrastructure.

Open access

Systems should be designed in a way that makes the entry of new participants easy, quick and inexpensive for both the new entrant and incumbents. This may be dependent on the architecture of the system, the standards applied and the business arrangements in place.

Risk management

Payment systems have the potential to generate a number of risks for participants, most notably credit risk. Managing these risks is an important focus of design for systems processing large values, but all systems should have risk-management features commensurate with the level of risk generated.

Ease of adaptation to changing needs

For many reasons the needs and preferences of both payment system users and operators evolve over time, often in response to changing technology. Systems should be as adaptable as possible so that changing needs can be met in an inexpensive manner. The ability to do so would ease some of constraints on innovation discussed later in this paper.

3. Snapshot of Consumer Payment Patterns in 2010

In late 2010, Roy Morgan Research undertook a study of consumer payment patterns ('Consumer Payments Use Study') on behalf of the Reserve Bank. The study was similar to one undertaken as part of the Board's 2007/08 Review of the Payments System Reforms, and provides insight into how different payment methods are currently being utilised by consumers and how this use has changed over the three years since the first study.[3] The 2010 study also examined consumers' perceptions about different payment methods and their attributes, which give some insights into the areas where consumers would see benefits in innovation.

The detailed findings of the survey are provided in a separate paper, *Strategic Review of Innovation in the Payments System: Results of the Reserve Bank of Australia's 2010 Consumer Payments Use Study*, published in conjunction with this consultation paper. A summary of the findings relevant to the Strategic Review is provided below.

3.1 The Study

The 2010 Consumer Payments Use Study was conducted during October and November 2010, with respondents asked to record every payment they made during a week in a diary.[4] For each payment, respondents were asked to record the date, the amount, the payment type (e.g. cash, credit card, internet/telephone banking), the merchant category, the channel (e.g. in person, internet) and, if a credit card was used, whether a surcharge was paid. Respondents were also asked about when and how they withdrew cash.

At the end of the week, respondents were asked to complete a separate questionnaire, which, among other things, asked them about factors that influenced their payment decisions and what would make them more likely to make specific types of online payments. These questions were aimed at understanding gaps in current consumer payment options.

In total, 1 240 valid responses were received, including 317 responses from participants that completed both the 2007 and 2010 studies. This resulted in a sample of almost 19 500 payments, with a total value of around $1.3 million. In addition, around 1 800 cash withdrawals were recorded, with a total value of around $320 000.

3.2 Findings

Results from the diary support two key conclusions:

- the broad patterns of payments behaviour observed in the first study still hold. In particular, cash remains the most widely used payment instrument in Australia and the dominant instrument for low-value payments (under $40). Cards are the dominant payment method for mid-sized transactions, while BPAY, internet/telephone banking and cheques are important payment methods for higher-value transactions (particularly those above $500); and

3 See Emery, West and Massey (2008).
4 The Roy Morgan Research Financial Transaction Diary®.

- payment patterns have nonetheless evolved in the three years between the first and second studies. Notably, use of cash and cheques has declined significantly as a share of both the number and value of payments by individuals. Debit cards appear to have been substituted for cash, with both eftpos and scheme debit gaining market share.

Some insight into the reasons for these broad payment patterns, as well as the changes observed in the three years between the studies, was provided by consumers' responses to questions about the factors that influence their choice of payment method at the point of sale.[5] While the most important factor determining payment choice is simply what consumers are carrying with them, consumers also value speed of the transaction and the ability to use their own funds. The importance of speed suggests that, while cash continues to be used for low-value transactions, there is the potential for cash to be displaced as processing times for card payments decline. The roll-out of contactless technology may be important in this regard.

Aside from use of these more traditional payment methods, the 2010 study also explicitly captured the use of online payment methods for the first time. Given that most payments by consumers are made in person, only 2 per cent of all payments are made using internet/telephone banking. Nonetheless, these have a relatively high average transaction size and, as a result, account for 9 per cent of the value of consumer payments. The more specialised online payment methods, like Paymate, PayPal and POLi, account for only around 1 per cent of total transaction volume and value.

Despite a small share of total consumer payments being made online, Australian consumers appear to be reasonably comfortable with current online payment methods. Around 60 per cent of consumers with internet access have at some time made an online transfer of money to family or friends and a similar proportion pay most of their bills online. About 80 per cent of consumers have bought goods and services online. Consumers, nonetheless, are concerned about the risk of fraud online and this is an important constraint on the use of online payments, both for those consumers that have made online payments and for those that have not. This latter group also views increased privacy as a factor that could encourage them to make payments online. Therefore, the survey results are suggestive of some need for further security innovation in the online payments market. In contrast, despite current online payment methods providing little scope for data or information to accompany a payment, this did not stand out as a factor constraining consumers' use of online payments. This issue, however, may be more relevant for businesses, as reflected by feedback during the initial round of consultations.[6]

The use of two new payment methods – contactless payments and mobile payments – was also examined in the study. To date, adoption of these newer methods has been limited. Only around 3 per cent of respondents had made a contactless payment in the month prior to the survey. Of those that had, the most common payment value was between $21 and $50, suggesting this technology may currently be replacing payments that would have been made as a 'swipe' or 'dip' credit or debit card transaction, rather than being used in place of lower-value cash payments. Less than 10 per cent of respondents had made a mobile payment at any time, with the main use of these payments being to purchase ringtones, games or applications for their phone.

5 Point-of-sale (in person) payments comprise around 90 per cent of all consumer payments.

6 It might also be true that consumers do not place value on features that they have not personally had experience with, leading them to focus more on factors that are more familiar, such as fraud.

4. The Decline of Traditional Payment Methods

The decline in the use of both cheques and cash in Australia provides a useful context for discussion of innovation. Each of these two instruments has its own distinct attributes that have contributed to its popularity as a payment method over many years, though the issues associated with declining usage differ between the two instruments.

4.1 The Decline of Cheques

The steady decline in cheque use over the past decade has made cheques the subject of an industry discussion of how their decline can be managed in an orderly manner.[7] Cheques are a relatively high-cost payment method, estimated in 2007 to cost financial institutions around $4 per unit, as well as imposing significant costs on users, particularly the payee.[8] As cheque use declines, many of the overheads remain, meaning that the unit costs are increasing over time. The Board is interested in approaches to manage the decline in cheques, first because it needs to be satisfied that the industry's approach is in the public interest, and second because some possible solutions may require the type of co-operative approach that is identified later in this paper as sometimes being difficult to achieve.

Despite having fallen from 40 per cent of the number of non-cash payments in 1995 to around 5 per cent currently, cheques are still in common use for one-off high-value payments, small- and medium-sized enterprise (SME) payments, superannuation payments, one-off government payments, dividends, donations and small personal payments. Among other things, this reflects the fact that cheques offer a number of attributes that are not readily replicated by electronic methods, including that they allow:

- physical, face-to-face, instant exchange, for example for a property settlement;
- unlimited additional data to accompany the payment, for instance by attaching the cheque to an invoice or other information;
- payment to be made when only limited information is known about the payee; and
- greater financial control where, for instance, the need for a specific signature (or multiple signatures) provides key account signatories oversight of all outward payments within a business.

The first three of these features have consistently been raised in consultations and are discussed further in Section 6. More generally though, it is likely that cheques will continue to be valued until viable electronic alternatives are widely available.

The Consumer Payments Use Study sought to identify the most important reasons why consumers use

7 See Australian Payments Clearing Association (2011).
8 Schwartz, Fabo, Bailey and Carter (2008).

cheques. It found that around 40 per cent of those using cheques (which in turn account for 40 per cent of consumers surveyed) did so because they felt they had no alternative for the type of payment they were making. This most likely reflects the first three attributes identified above. This was followed by around 25 per cent who used cheques because of the record of payment they provided. That said, it is notable that there is a very marked difference in the use of cheques by age group. According to the Consumer Payments Use Study, only around 11 per cent of consumers in the 18 to 29 years age bracket had used a cheque in the past year, while 57 per cent of those 60 years and older had done so. This suggests that younger generations have a greater preference for, and/or less difficulty in finding, replacements for cheques.

As mentioned, the main policy question surrounding cheques is how their decline is managed in an orderly manner as unit costs rise. The Australian Payments Clearing Association's (APCA) consultation paper on the issue focuses on a range of possible industry approaches to this question. Part of the reason that cheque use remains relatively widespread is that cheques are inexpensive to those writing them, with most of the costs borne by the payees and the financial institutions that process them. This model is likely to become harder to sustain as unit costs continue to increase.

One possible response by market participants would be a change in pricing structures involving financial institutions and large recipients of cheques passing their costs on to the payers in a transparent way. Of course the decision to do so would be unpopular with segments of the community and may be difficult for institutions to make unilaterally. Equally, competition law concerns might make collective action difficult.

Other possible responses to declining cheque use might include:

- making further changes to cheque processing arrangements to reduce their cost so that the system can be more sustainable at lower volumes; or
- consider phasing out cheque clearing – the approach being considered in some other countries, including the United Kingdom and Ireland. This would be difficult without alternative instruments having been developed to fill the gap.

The Board welcomes APCA's consultation process in relation to the cheque system and the prospect of an industry-driven response to declining cheque use. Nonetheless, the Board would like to hear views of stakeholders on these issues in order to assist it in forming its own views, and to test the public benefit of any possible solutions.

Issues for discussion

1. *Are there aspects of cheque usage that are unlikely to be dealt with by industry initiatives currently underway or likely to be undertaken in the next five to ten years?*
2. *Could the decline in cheques be managed by pricing cheque use in a way that provides better signals to users?*
3. *Can a case be made for reforms to make cheque processing more efficient and therefore sustainable at lower cheque volumes?*
4. *Could institutions unilaterally withdraw from the cheque system, leading to specialisation by a small number of institutions?*
5. *Is there a case for phasing out cheque clearing over time? How could that be managed while ensuring that satisfactory alternatives are developed?*
6. *Should government agencies' policies on payments be used to influence cheque usage?*

7. *Should the approach to cheques be determined by individual institutions, determined collectively by the industry, or determined by the Payments System Board?*

4.2 Cash Replacement

In some ways cash is displaying some broadly similar trends to cheques. The Consumer Payments Use Study identified a marked decline in cash usage relative to other payment methods since 2007, as it has been replaced by electronic payment methods, particularly payment cards. Nonetheless, cash remains the most commonly used payment method, particularly for low-value payments. The cost of cash use is also significantly lower than that for cheques, and indeed than for any other payment method for low-value transactions.[9] Nonetheless, the use of contactless and pre-authorised card transactions has the potential to reduce transaction times for card payments and may further reduce cash use over time.

The Board welcomes views on issues arising from declining cash usage.

Issues for discussion

8. *Are there any impediments to the development and adoption of products to replace cash?*
9. *Is there any case for public intervention in cash replacement?*

9 Schwartz *et al* (2008).

5. The Environment for Innovation in the Australian Payments System

Innovation in the Australian payments system has been quite varied. Casual observation of the current environment suggests significant innovation across a number of areas. As discussed in Section 3, there has been a very strong movement towards online payments in recent years and new online systems such as payclick, Paymate, PayPal and POLi have emerged. Some credit card schemes have adopted EMV chip technology and eftpos is entering a similar process. The availability of contactless cards and readers has expanded rapidly in recent times, with usage gradually increasing. Individual institutions are experimenting with new ways of utilising mobile phones for person-to-person and point-of-sale mobile payments.

Despite this, there are clearly identifiable areas where there is an emerging or anticipated demand for payment services that are not currently being provided. These will be discussed in more detail in the next section, but they include the transmission of additional data with payments and real-time or near real-time transfers. To a degree, these emerging innovation gaps derive from inflexibility in the co-operative clearing and settlement arrangements that underpin many of Australia's main retail payment systems. Ironically, some of these same systems were at the forefront of global innovation when they were first implemented in the 1980s. This highlights a fundamental distinction between types of innovation in Australia – proprietary versus co-operative innovation.

Proprietary innovation is that which occurs largely at the discretion of a single commercial entity. As such, the decision to innovate in this way will be based largely on the benefit to the innovator. An innovation might reduce costs to that entity or generate additional revenue. In either case, in a competitive environment, this is likely to generate benefits for both end-users as a group and shareholders. However, the scope of proprietary innovation can be relatively limited. For instance, a bank may implement a mobile payment system to service its own customers relatively easily, but a system that provides the same level of service for payments to and from another bank's customers is much more difficult because it requires co-operation between the two.

Co-operative innovations are those that create change across all participants in a system and, therefore, rely on the co-operative arrangements between system participants to achieve change. This is most clearly evident in Australia in the payments clearing systems operated by APCA, which underpin Australia's key retail payment systems. Innovation in these arrangements requires agreement of the participating members. APCA's structures have been designed to facilitate this, but the very nature of the agreement required can make change difficult. Fundamental change in these areas has at times been hard to come by.

Less problematic for innovation is the case where there is a single, commercially focused decision-making body for a payment system. One example of this is the international card schemes, which can implement innovations either through mandated rule changes or through commercial arrangements with participants. This sort of arrangement has been mirrored in the establishment of eftpos Payments Australia Limited (ePAL) to govern the eftpos system. This is already resulting in moves towards greater innovation in that system.

This section first examines some of the possible barriers to payments innovation from a theoretical perspective, before considering questions related to the high-level governance arrangements for the industry, including identifying some of the models adopted overseas. It then considers the structure of clearing and settlement rules in Australia and payments system architecture.

5.1 Why Might Innovation be Difficult: Insights from Network Literature

Innovation in network industries is notoriously complex because 'network effects' mean that choices by individuals or firms may not necessarily lead to adoption of a network or innovation that is in the public interest overall.[10] This occurs because, on the demand side of network markets, an individual user of a network values the network more highly as the number of users increases. This makes innovation difficult as an individual decision-maker does not take into account the benefit that their joining the network or adopting the innovation provides to others. Another implication is that 'inertia' (where movement from a legacy product to a superior product fails, or is slow, to occur) is possible because the network benefits of the old and widely used system may outweigh the technical benefits of adopting new, technically superior technology that is not used by many people. For instance, members of a widely used membership-based online payment system may be reluctant to move to a new system with fewer users, even if they thought it was a superior system. This inertia may be a socially efficient outcome, but there may also be cases where the full social benefits from switching may outweigh the costs.

Inertia might also occur as a result of co-ordination problems, where consumers' choices depend not just on the technical benefits of innovations on offer, but also on expectations of the technology choices that other consumers will make. In particular, consumers may not adopt a new technology if they are unsure whether it will be adopted by other consumers – the so-called 'chicken-and-egg' problem. In payment systems, this problem is magnified by the fact that often two different groups of end-users, for instance merchants and consumers, need to be convinced simultaneously of the benefits of a new technology. This may be a particular problem with emerging technologies, such as mobile payments, and can suggest a need for co-ordinated standards.

This review, however, is more concerned with co-ordination on the supply side of network markets, where industry participants need to co-operate in the provision of compatible network products so as to deliver a system that is of optimal benefit to end-users. Such situations are characterised by strong incentives for both compatible and incompatible competition between participants. Where there are strong network benefits, user demand for a high level of compatibility can drive co-operation, as demonstrated by Australia's universally accessible eftpos and ATM networks built on bilateral arrangements between financial institutions. At the same time, there are a number of reasons why firms may resist co-operation and compatibility of systems. Dominant firms, in particular, have strong incentives to avoid compatibility because it neutralises the competitive advantage of market leadership by allowing the customers of competing firms to share in the network benefits. Even where firms are using fundamentally compatible technology, dominant firms can still use incompatibility to create barriers to entry – for example, by promoting standards that are difficult for competitors to meet.

The literature suggests that there are a variety of reasons why industry bodies might find it difficult to foster sufficient co-operation between participants for a move to a new technology. These include industry

10 There is a large body of literature on the economics of network markets and the related topics of standardisation and switching effects. Most of the points discussed here can be found in three surveys of the literature: Farrell and Klemperer (2007) provide a detailed survey; David and Greenstein (1990) give an account of the early literature; and Stango (2004) focuses on how network effects influence the standards-setting process.

participants: having existing investments in different technologies; having concerns that their investment in standardised technology might hand competitors an advantage; trying to retain arrangements to keep competitors out; and disagreeing over the timing of a technology upgrade because of misalignment of their investment cycles. A particular problem of industry bodies that the literature focuses on is the difficulty of achieving consensus in a committee style of decision making. This process can be viewed as a war of attrition, whereby participants have vested interests in particular technologies, leading them to try to outlast each other in supporting their preferred technology.[11] Accordingly, although vested interests do not necessarily prevent industry bodies from choosing the optimal technology, they can cause excessive delays in the decision-making process. Other concerns with committee decision making are that: technology decisions tend to be backward looking and based on proven technology, as it is easier to gain consensus on familiar technology; and the technical competence required for discussions on technology means that the views of end-users may not be adequately represented.

Policy recommendations from the literature

The literature has generated relatively few specific policy recommendations owing to the complexities of network markets. Nevertheless, it suggests that standards are an important mechanism for solving co-ordination problems on both the supply and demand sides of network markets. Accordingly, public policy can support and, if necessary, strengthen standards-setting organisations.[12]

The literature offers some suggestions to reduce the problem of delays in the committee style of decision making that is commonly found in industry bodies and other standards-setting organisations, including:

- changing voting rules to reduce the power of vested interests, for example by adding independent directors or allowing majority voting;
- allowing incomplete standardisation, such as by allowing the use of adaptors/translation services for incompatible technologies in parts of the standard; and
- standardising early, before vested interests can develop, although this may be at the expense of failing to co-ordinate on the optimal standard for society as a whole.[13]

The literature also notes that in some circumstances, especially where industry participants are resisting the compatibility of network goods, public policy may need to mandate a particular standard. However, this should only be done when the merits of competing standards are clear and when standards are likely to be long-lasting – not when technology is undergoing rapid change. Also, performance standards are preferred to technical standards; for example, a target can be set for the provision of particular services, without mandating the particular technology involved.

The Australian experience

The above observations seem broadly consistent with observed outcomes in Australia. In general, significant co-operative innovations have been difficult to achieve, with key stakeholders often unable to reach agreement. Where significant co-operative innovation has occurred, it has often been with the aid of some form of external intervention. Examples range from the creation of the RTGS system in the 1990s, to ATM

11 See, for example, Farrell (1996).
12 Farrell and Klemperer (2007).
13 Farrell (1996).

reforms and implementation of the industry Community of Interest Network (COIN) for the clearing of retail payments between payments system participants. This suggests that further consideration of the governance arrangements for the industry is warranted to determine whether there are enhancements, or indeed an alternative model, that could help to overcome these issues.

5.2 Representation in Industry Governance

One important question in examining industry governance is whose views governance arrangements take into account. Decision making in relation to Australia's retail systems takes place at a number of levels:

- individual payment system participants make their own proprietary decisions about services offered to end-users and the investments made to provide and support those services;
- stand-alone payment systems, such as the card systems, may also make decisions from a largely proprietary perspective, but may consider both participants and end-users as customers;
- at an industry level, APCA makes decisions about the co-operative aspects of payment systems through rules governing payments clearing. APCA rules encompass factors ranging from interconnection standards and the type of payments that can be cleared through different systems to payment message formats and device standards; and
- the Payments System Board has an overarching mandate for promoting safety, stability, competition and efficiency in the payments system. It has powers to set standards and access regimes for these purposes. The Board has a preference for co-operative industry solutions and only uses its powers where issues cannot be adequately addressed otherwise. To date this has occurred for only a few systems and in relation to a relatively narrow set of issues.

It is the latter two levels that are best placed to take account of broader payments system and public interests.

APCA is the principal industry body representing the payments industry in Australia, although its genesis is in management of specific clearing streams and it has no formal decision-making role in relation to significant elements of the payments industry as a whole. Nonetheless, under Core Principles adopted in 2007, APCA aims to improve the safety, reliability, equity, convenience and efficiency of the Australian payments system. APCA decision-making is based on a series of six management committees and a board, with representation related to clearing volumes and arrangements to provide collective representation for smaller participants. In the five clearing system management committees, voting is structured according to each member's share of 'national transaction volume' or 'activity'. A similar method is used for the APCA board, except that the votes of members with larger shares are constrained. Members of the board are solely financial institutions, while two retailers are represented on the management committee for the Consumer Electronic Clearing System and Infrastructure Management Committee 1 (IMC1), by virtue of their role in acquiring card payments. IMC1 also includes representatives from technology, infrastructure and payment service providers.

APCA has methods to reach out to other stakeholders. Traditionally it has used a structure of advisory councils to provide views to the management committees, however in 2009 it reviewed its stakeholder arrangements and decided to replace the advisory councils for the Australian Paper Clearing System and Bulk Electronic Clearing System with the APCA Stakeholder Forum. This change was made to improve the expert advice to those management committees and to increase the number of stakeholder participants. APCA has also tried to gain broader industry input on strategic issues with the formation of the Australian Payments Forum. The Forum promotes discussion of industry policy on the efficiency of the Australian payments system. Its

membership includes non-APCA payment systems and community groups, giving it a broader representation than that of the advisory councils and the Stakeholder Forum.

Nonetheless, the decision-making powers of APCA are focused on its core clearing system functions, with decisions made by clearing system participants. Any focus on innovation in this framework may therefore be constrained by the 'business case' for the main participants (as well as being subject to the co-ordination issues discussed in the previous section).

The broader public interest is explicitly the focus of the Payments System Board. In fulfilling this role, the Board consults widely with stakeholders of all types in an effort to gauge the public interest. But its role has been to address issues that are affecting competition and efficiency that the industry has been unable or unwilling to address. In general, it has taken the view that innovation should be driven by the industry itself unless there is a clearly demonstrated market failure.

One outcome of the current structure of industry decision-making is a perception that the needs of end-users for new or altered product offerings are not taken into account sufficiently. As discussed in the next section, there are a number of examples where the needs of the business community and government agencies are not being fully met and, while consumers do not have a collective voice on payments issues, there are products and features that could provide a benefit to them that are currently not offered.

There is also a perception that some industry players do not have an appropriate voice. For instance, the rules for the ATM system are largely set through the APCA processes, but some of the largest owners of ATMs have no direct input into these decisions, once again largely as a consequence of APCA's clearing mandate. Even more difficult to accommodate in industry governance are the interests of potential entrants to a system.

Once again these issues raise the question of whether there are changes to the governance model for the Australian payments industry that would be publicly beneficial.

5.3 Meeting the Cost of Innovation

Successful governance arrangements might need to take into account the possibility that system-wide innovation can impose net costs on some participants, while providing benefits to others.

Where decisions in relation to an innovation are in the hands of a single entity, and there is a clear demand for that innovation from end-users, its provision will simply be a matter of the provider assessing the potential returns given the demand. In the absence of market failures, the innovation will most likely proceed if there is a net benefit. Where co-operation is required to provide that innovation, the type of co-operative failings outlined in Section 5.1 may prevent the innovation proceeding, including where the innovation will provide a return for some participants, but not others. A governance arrangement that allows such innovations to proceed if they are in the public interest may therefore impose costs on some participants unless a mechanism for redistributing benefits and costs can be found. It may be that such innovations require some form of mandating in order to proceed. The Board is interested in understanding whether there are other mechanisms for achieving the same outcome. For its part, the industry (through APCA) has suggested that co-operative innovation will be given the best chance of proceeding if both the 'industry case', including overall net benefits to end-users and participants, and the 'business case', including how the benefits and costs are distributed, are clearly articulated. The Board is also prepared to consider the possibility that there are circumstances where co-operative failings or incentive structures are such that innovations in the public interest cannot be delivered by the industry and should instead be delivered by the public sector, as occurred with the RTGS system, or with public sector involvement.

5.4 Impact of the Regulatory Framework

The current regulatory framework for the payments industry anticipates that that the industry will self regulate, with the Payments System Board intervening only where outcomes in the public interest cannot be achieved. Overlaid on this framework is the *Competition and Consumer Act 2011*, which, in the interests of preventing anti-competitive behaviour, places constraints on the ways in which industry participants can co-operate. It is clearly not the intention of the Competition and Consumer Act to prevent co-operation that is in the public interest, and mechanisms are in place to allow for such co-operation. Nonetheless, concerns about competition issues have hampered co-operative efforts and at times the Payments System Board has regulated to provide legal certainty where an industry solution might have been possible in the absence of competition concerns.

Alternative governance arrangements might encompass a framework that gives APCA or other industry bodies greater capacity to achieve co-operative outcomes, supported by the Reserve Bank, but without the need for the Reserve Bank to regulate to provide legal certainty. The Board is interested in views as to whether there is a case for legislative changes to support such a framework.

5.5 International Models for Industry Governance

Governance models for payments systems internationally are as varied as the payments systems themselves. In broad terms, there tend to be three types of functions performed by governance bodies:

- system operation, e.g. Canadian Payments Association (CPA), Iberpay (Spain);
- rule-setting and co-ordination of decentralised systems, e.g. APCA, Central Credit Committee (Germany), Payments Association of South Africa (PASA); and
- strategic planning, e.g. the UK Payments Council, National Forum on the Payment System (the Netherlands).

However, the framework for performing these functions varies. Some bodies perform multiple functions and some functions may be performed by multiple bodies. A strategic planning function might not be explicitly performed by any body.

The interests of this review are largely in the rule-making and strategic functions. Rule-making bodies globally may be bankers associations, such as in Denmark, Finland or Germany, or specialist payments bodies, such as APCA, PASA, and, as of 2010, Payments NZ Limited. The latter allow non-bank participation, but membership of these bodies largely consists of system participants and sometimes includes the central bank. In a limited number of cases, accountability is improved by the inclusion of independent directors, for instance Payments NZ Limited incorporates an independent chair and two independent directors.

Some rule-setting bodies also play a strategic planning function, for instance PASA. However, there are now also a number of forums or councils that focus predominantly on non-commercial, longer-term strategies for co-operative development of payment systems. Representation is usually (but not always) diverse compared with other payments organisations, including consumer, business and other special interest groups. Some groups have the power to bind industry to their decisions (e.g. UK Payments Council) while others simply advise (e.g. National Forum on the Payment System). Some of these bodies have published road maps or plans for system development.

One example of a body focused on the strategic direction of the payments system is the UK Payments Council. The Payments Council co-ordinates the longer term development and strategy of the payments system. It was developed to meet the concerns of regulators that the payments system was poorly governed and

uncompetitive. It has an independent chair, four independent directors, 11 industry representatives and a Bank of England observer. The independent directors come from a variety of non-payments-related backgrounds and have a collective veto on board decisions. The decisions made by the Payments Council are binding on the industry.

On the other hand, the National Forum on the Payment System in the Netherlands was established by De Nederlandsche Bank to discuss advancing the payments system, but does not have regulatory powers. Members include disability, retail, seniors and charity associations, with the Netherlands Bankers' Association representing payments industry participants. Other forums of this nature are the Payments Forum in Finland and the Payments Systems Committee in Sweden.

Issues for discussion

10. *Do current governance arrangements adequately promote payments system innovation?*
11. *Are the needs of payments system users and non-ADI payment service providers adequately considered in decisions about the direction of the payments system?*
12. *Are there ways of altering current governance structures to make innovation easier?*
13. *Are there ways of altering current governance structures to take more account of the views of end-users?*
14. *Could a new decision-making body with broad representation of payments system participants, service providers and end-users provide a better strategic focus for the payments system, taking adequate account of costs and the public interest?*
15. *How could such a body have the capacity to reach decisions across a diverse group of members?*
16. *Could such a group make binding decisions and how could they be enforced?*
17. *Could formalisation of a broader mandate for APCA, coupled with broader representation, provide better industry-wide outcomes?*
18. *What role should the Reserve Bank and the Payments System Board play in setting the reform agenda for the industry?*
19. *Have concerns about breaches of the Competition and Consumer Act (formerly the Trade Practices Act) prevented the industry from achieving greater co-operative innovation? What approaches are suggested to deal with this in a way that does not undermine the intent of the Competition and Consumer Act? What are the advantages and disadvantages of each?*

5.6 Structure of Clearing and Settlement Rules

In addition to the broader decision-making framework for the industry, it is appropriate to also consider whether the current structure of clearing and settlement rules and arrangements is the most conducive to innovation. In particular, clearing and settlement arrangements should ideally allow relatively straightforward access to players with new products and new business models, provided that any risks they bring to the system are appropriately managed.

Current structure

Settlement of interbank obligations arising from the payments system ultimately occurs across exchange settlement accounts (ESAs) of direct participants in RITS. Settlement of retail payments in most cases occurs the next business day via the 9am multilateral net batch in RITS, with high-value or time-critical payments settling individually on a real-time basis through RITS on the same day. RITS also provides for other batch settlements during the day. Currently, the equities settlement system, CHESS, settles in this way; individual payment systems or networks can also use this facility, including for same-day settlement. In the period immediately ahead, RITS will also have the capacity to settle bilaterally exchanged bulk files shortly after the time that the files are exchanged.

Currently, clearing of payments is largely focused in five clearing streams administered by APCA: cash distribution and exchange; paper; consumer electronic; bulk electronic and high value. Clearing of non-APCA systems, such as BPAY and the international card schemes, occurs separately, but the interbank obligations arising are incorporated into the APCA streams for settlement in the 9am batch.

These clearing and settlement structures are governed by rules at various levels. At the interbank settlement level, Reserve Bank policy and contractual arrangements govern the eligibility of parties to hold ESAs and become RITS members, and the rights and obligations that ensue. As discussed above, at the clearing level APCA rules govern the APCA clearing streams on a wide range of issues. In addition, non-APCA payment systems, such as BPAY and the international card schemes operate under their own rules. Recently, rules relating to the operation of the eftpos system were removed from the Consumer Electronic Clearing System and incorporated into separate eftpos rules under the administration of eftpos Payments Australia Limited (ePAL).

Issues arising from the current structure

The Board is interested in views on how well this structure accommodates innovation, in particular: the reliance on current APCA clearing streams for settlement of obligations of most payment systems; the varying role of APCA rules depending on the payment system; and the role of access to both payment systems and clearing arrangements in promoting innovation.

A useful perspective on current arrangements is to consider a case where a subset of institutions wished to provide a new type of retail payment with different characteristics to those currently cleared through the APCA clearing streams (for instance, incorporating near-real-time availability of funds, facilitated by same-day settlement, and the capacity to carry additional data). How easily could this be achieved? Such payments could not be accommodated through APCA clearing streams without significant changes to APCA rules, which may be difficult and time-consuming, particularly to the extent that it requires agreement from competitors. The new product could therefore only proceed in a timely fashion with its own clearing rules and settlement arrangements, outside the APCA framework, even though there might be significant overlap with APCA rules. This raises the question of whether there are ways of easily facilitating innovations of this type. A related issue is how well new uses of existing instruments by individual players are accommodated by APCA rules and whether there are cases where these unnecessarily constrain innovation.

A further issue is whether the delineations between different sets of rules – system-specific rules, APCA clearing rules and Reserve Bank rules relating to ESA/RITS eligibility – are appropriate, logical and provide the right degree of flexibility. One current inconsistency is that, in some cases, APCA rules govern the entirety of a system (such as the cheque system), but in other cases, notably eftpos, a separate set of system rules applies

and APCA plays a residual role. In yet other cases, APCA plays a role only to the extent that final interbank obligations are incorporated with APCA clearing streams for settlement. The Board is interested in how these various rules should interact and whether greater uniformity in the treatment of different systems would be beneficial.

Finally, it is often new entrants to a market that bring innovation. Over recent years there have been some efforts to make access easier for new entrants to existing retail payment systems. This includes access codes/regimes for the MasterCard and Visa systems, the eftpos system and the ATM system, while clearing system rules have also been made more amenable to access. Despite these efforts, new entrants to these systems have been rare. For instance, little formal use has been made of the eftpos and ATM access codes and only a small number of entities have taken advantage of arrangements to allow more specialised players in the credit card systems.[14] Therefore, there may also be justification for the Board to consider whether access arrangements for existing systems are constraining innovation.

Issues for discussion

20. *Does the current structure of clearing and settlement adequately allow for the introduction of new payment products? How could this be improved?*
21. *Is the current structure of rules applied to payment systems, including the five APCA clearing streams, the most appropriate?*
22. *How should clearing and settlement rules change to take best advantage of upcoming functionality in RITS for same-day settlement of bilateral bulk payment files (and existing functionality for same-day batch settlement). Could rules be established for individual 'settlement streams', including for instance on the timing of availability of funds and the individual transaction values eligible for that stream?*
23. *Are there alternative models for clearing rules? For instance, could a set of generic (but narrowly focused) clearing standards cover multiple payment systems, with more detailed system rules applied at the individual system level? Should such clearing arrangements be mandatory for all payment systems, including those not currently party to APCA arrangements?*
24. *What other ways are there of allowing providers of new payment products or systems easy access to clearing and settlement arrangements. Is there a case for establishing a standard minimum payment message type that participants are obliged to accept from agreed counterparties?*
25. *Do existing clearing arrangements allow sufficiently easy access for new participants? If not, what could be done to improve this?*

5.7 System Architecture

System architecture can have a significant impact on both access and the capacity to innovate. The bilateral relationships and architecture that underpin some of Australia's main retail systems have been relatively effective in facilitating the initial establishment of payment systems, such as the ATM and eftpos systems, without requiring participation from all institutions from the outset. However, once established, such systems have tended not to be easily accessible and to have difficulty innovating. This is of course a function of decentralised governance as well as architecture.

14 In conjunction with the Access Regimes for the MasterCard and Visa systems, the Australian Prudential Regulation Authority has established a separate class of authorised deposit-taking institutions (ADIs), known as specialist credit card institutions (SCCIs), allowing such entities to conduct only credit card issuing and acquiring.

The establishment of the industry COIN is resolving some of the complexity of access to payments clearing and settlement in Australia by allowing new entrants to establish just a single physical connection to the network, rather than individual connections to each other participant. Nonetheless, these arrangements maintain bilateral logical and business relationships between participants. Under these circumstances, there may be additional advantages to further centralisation in the form of a hub – centralised architecture through which payment messages are directed to the recipient.

In its simplest form, a hub has the ability to receive messages from any payments system participant and send messages to any payments system participant. In this way, a hub could remove the need for bilateral connectivity, security and testing and reduce the need for the same functionality to be built by all participants. This naturally reduces the cost of entry to the system, both for new entrants themselves and for the incumbents. And unlike bilateral arrangements, the cost to new entrants will not increase as the number of participants increases.

Hubs can take different forms and perform a range of different functions. Just as the traditional bilateral physical links between institutions in Australia have facilitated the exchange of both bulk payment files and real-time individual transactions (for ATM and eftpos), hubs could perform either of these roles, depending on their design. But in addition to simply relaying messages, more sophisticated hubs can perform more sophisticated functions for the network. For instance, if transmitting bulk payment files, a hub could split those files and direct payments to the respective receiving institutions. Importantly, a hub can allow communication between participants that choose to adopt different communication and security protocols and it can potentially translate between different message formats. This means, for instance, that migration to a new message standard could occur at different times for different participants or, indeed, that participants could remain on different standards indefinitely. In other words, in terms of the discussion in Section 5.1, a suitably designed hub can allow incomplete standardisation within a network, potentially reducing the barriers to innovation and facilitating more direct participation. On the other hand, a hub is a central point of failure and would require high levels of resilience and availability.

Of course, governance and contractual arrangements for a hub are also important. A hub could be governed by co-operative industry arrangements mirroring those for the APCA clearing systems – the approach taken for the industry COIN. Alternatively, the operator of a hub could be established as a separate entity that governs the terms of access to the hub, potentially centralising some of the bilateral business underpinnings of current systems, further reducing the cost of access and simplifying decision making.

Several hubs already operate within the Australian payments system, including the SWIFT system for clearing high-value payments and the BPAY system. One focus for this review is whether there would be advantages from any additional use of hubs, with options ranging from simply an expressed industry preference for newly established systems to utilise hubs, to creating a hub that could be used by a range of systems, both existing and emerging. A possible model to take account of legacy arrangements could be to require participants in a system to be able to send and receive messages via a hub, but to allow them to retain existing bilateral arrangements where convenient. This would provide easy access to new participants or those wishing to take advantages of any more sophisticated services offered by a hub, without unduly disrupting established arrangements.

Issues for discussion

26. *Could greater use of hubs improve efficiency, access and innovation in the Australian payments system?*
27. *In what areas would a hub or hubs be useful – for instance, for transmission of clearing files, or for real-time individual transactions? For what type of payments would a hub be useful? What functions could a hub or hubs provide? Could a hub be available for use by multiple payment systems?*
28. *Should hubs be considered best practice for new payment systems? Should existing systems be migrated to a hub? Could hub services be offered in a way that allows participants to opt in, while providing full services to new entrants?*
29. *What type of ownership, governance and management arrangements would be desirable for a hub?*

6. Innovation Gaps in the Australian Payments System

The Board's expectation is that putting in place the right environment for innovation will be helpful, but not always be sufficient, to address potential gaps in the payments system. There may still be a need to determine an agenda for industry and set priorities. To that end, there are some specific areas that are currently worthy of additional consideration.

This section examines a number of specific areas that have been raised during the Bank's consultations with stakeholders. In some cases these are areas where there is specific functionality that some stakeholders consider to be important but which is currently unavailable. Others are areas where technological change is generating rapid change in payments and there is a case for considering whether the landscape is evolving in a desirable way or whether there is a need for greater co-ordination.

Issues for discussion

The following discussion questions are relevant for each of the topics discussed below:

30. *How widespread is the demand for the innovation in question and how significant would the impacts be?*
31. *Are there any specific impediments to that innovation occurring, e.g. barriers to entry, co-ordination problems, technological constraints?*
32. *Is there a case for public intervention?*

Additional issues for discussion are identified under the individual topics.

6.1 The Transmission of Data with Payments

An important theme that has come out of the Bank's initial consultations is the difficulty in transmitting additional data with payments in Australia. This links closely with the objective of integrating payment systems with other processes, noted in Section 2. Businesses, in particular, find that the absence of an electronic means to carry additional data with payments results in them either having to resort to using cheques or to separate data and payment information and reconcile them at a later stage. Inevitably, this means more cumbersome and often manual processes. To a lesser degree, this can also be an issue for individuals, who might wish to provide information with a payment made through internet banking, for example.

This issue is also related to electronic bill presentment and payment, otherwise referred to as e-invoicing. Such systems allow a bill to be sent electronically to a customer, who can then view and pay the bill through the same system, with notification returned to the biller. Such a service is available through the BPAY system.

The issue is principally focused on the Direct Entry (DE) system, through which a large share of business and internet banking payments are made. An example of the types of difficulties that currently arise is where an employer is making payments to a superannuation fund on behalf of multiple employees. While it would be convenient to make these payments via the DE system, the superannuation fund also needs a range of information in relation to the payments, which might include items such as the employer's Australian Business Number (ABN), contact details of the employer and employee, a contribution reference, tax file number, the employee's personal details and the type of payment. However, the DE system can only carry 18 characters of free-form information. In many cases, employers are forced to pay by cheque with physical documentation attached.

Several solutions are possible.

First, the DE system could be re-engineered to allow each payment to be accompanied by a much richer set of information. International messaging standards are moving in this direction. This might also require significant re-engineering of both bank and end-user systems.

A somewhat less disruptive solution would be for the existing 18 characters in DE messages to be used to carry referencing information that could direct the recipient to more detailed data. A proprietary system is already using this approach to direct payment recipients to a web address containing the information required for superannuation payments. Such a system could be applied more generally for the DE system. Those that support this approach suggest that the new standards could be voluntary to allow adoption ahead of the pace of slower movers.

A third suggested solution assumes that changes to the DE system are likely to be difficult to co-ordinate and expensive to implement. It suggests that a completely separate system be used where there is a need to carry additional data, perhaps using the ISO 20022 standard, which allows both structured and unstructured remittance information to be sent with the payment. The BPAY MAMBO system, which is currently under development, has been suggested as one system that might be able to provide this.

Issues for discussion

33. *Possible solutions to the transmission of additional data with payments include: the use of existing free data fields in the DE system for a referencing system; the reconfiguration of the DE system to accept much larger quantities of free-form information; or the use of another system for payments requiring the carriage of additional data. Are there other alternatives? What are the advantages and disadvantages of each? Which option is preferred? How should that option be implemented?*
34. *What role should messaging standards, such as ISO 20022, play in any solution for transmission of additional data?*
35. *The superannuation industry is working to address issues associated with transmission of data related to superannuation accounts and payments. Is there a contribution that can be made by the payments industry beyond the proposals discussed above?*

6.2 The Timeliness of Payments

The timeliness of payments has been identified as an important attribute of payment systems and is attracting an increasing focus around the world. As suggested in Section 2, there are at least two elements of timeliness. First, those receiving payments may wish to access funds as quickly as possible after the payment has been

made. Second, for a retail transaction, merchants may wish to have real-time confirmation of the payment so that goods and services can be exchanged, even if funds cannot be accessed until a later time. These are dealt with separately below.

Timing of availability of funds

As discussed, Australia's main retail payment systems operate on a deferred settlement basis. Payments information is batched into files, which are exchanged between banks during the day and processed through their systems overnight.[15] Settlement between banks occurs the next day at 9am. While, for direct participants, customer accounts are treated as having been debited and credited on the day of the file exchange, funds are only required to be made available to the recipient at 9am on the day after the payment has been made. For other participants, funds may be available later than this.[16] Accordingly, this system is not well suited to making funds accessible quickly, especially across all financial institutions. Where weekends or public holidays are involved, the delay will potentially be even longer.

For many payments, delayed availability is not a great concern. For instance, salaries or other predictable payments can be timed so that funds are available when required. However, emergency government or personal payments are more problematic and failure for them to be received in time could result in considerable hardship for the recipient. In recent times, many Commonwealth emergency payments have been made through the high-value real-time gross settlement system because there has been no viable alternative. In other cases, for instance during the recent floods in Victoria, payments have been made with prepaid cards.

In the past few years there has been considerable focus overseas on providing systems that allow electronic payments to be available shortly after initiation by the payer. One example is the Faster Payments Service in the United Kingdom, which allows customers to initiate payments via internet banking with funds available to the recipient in many cases within seconds. Payment messages can be sent in real-time, similar to the eftpos and ATM systems in Australia, or submitted in batches, and are made immediately available to the recipient by the receiving bank providing credit. Interbank credit is managed via the use of three same-day settlement batches and a net debit cap for each bank. The National Electronic Funds Transfer system in India takes a different approach, with hourly settlement sessions 5½ days a week, and funds typically available to recipients within two hours of settlement. Another approach again is the Telegiro New Style system in the Netherlands, which can route urgent credit transfers either through the TARGET2 RTGS system or the European Bankers Association's deferred settlement arrangements, with funds available to the payee no later than 1½ hours after the payment is initiated.

There are two obvious obstacles to faster funds availability in Australia. First, as mentioned, next-day settlement of retail payments is not conducive to faster funds availability. Second, the internal systems of some banks are geared to overnight processing and are not presently capable of crediting accounts in real-time or near real-time. This is an argument for these older elements of the Australian payments system to be updated.

A related issue is the availability of such payments over weekends. Currently, a retail payment made on a Friday night might not be available to the recipient until the following Tuesday, as payment files would not be processed until Monday night. The Faster Payments Service does not provide interbank settlement over the weekend, although settlement would still occur a day earlier than in Australia. Funds continue to be made available to recipients in a timely fashion by the extension of credit, within the established bank limits. A similar

15 Payments information is generally exchanged in real time in card-based systems, but settlement still does not occur until the following day.

16 For illustrative purposes, this would be likely to apply to fewer than 5 per cent of credits processed through the Direct Entry system, if received by institutions' cut-off times.

approach could be taken in Australia, depending on the values involved, but consideration could also be given to extending settlement to weekends.

An alternative model for providing faster customer access to funds without the need for credit provision by the receiving institution is to move, not just to same-day settlement, but to real-time or near real-time settlement of retail transactions. As RITS is geared to processing a relatively small number of high-value payments, this would require changes to the RITS infrastructure, to build a high-volume messaging system which would pass interbank settlement positions to RITS on a near real-time basis. This would still be reliant on financial institutions' systems being capable of making funds available to customers in a timely fashion. Bearing in mind the relatively low values (and therefore credit risk) generated by retail systems, the possible benefits would need to be weighed against the efforts to build such a system.

Real-time confirmation of payments

For many merchants it is not immediate access to funds that is important, but immediate confirmation that an irreversible instruction to pay the funds has been made and that the funds are indeed available in the payer's account. Card payments facilitate real-time confirmation of payment to merchants by checking funds/credit available to the customer and blocking that amount in the customer's account. This allows purchased goods and services to be released to the customer immediately. In some cases, most notably contactless cards, transactions are processed 'off-line' (without checking funds/credit availability) up to a relatively low limit.

Given the rapid take-up of online payments, the provision of similar functionality online is important. This functionality is available from the international card schemes, which dominate this space, as well as some specialist online payment providers. It can be argued therefore that there is no gap here, but the Board has been concerned that there is not greater competition in this area. Widely used systems such as BPAY and Direct Entry are not able to provide this functionality, while the eftpos system can do so only in a point-of-sale environment.

Issues for discussion

36. *To what extent will systems already under development or discussion address issues related to the timeliness of payments? What gaps will remain?*
37. *What new systems or enhancements to existing systems would be required to achieve more timely payments? How could these innovations be achieved?*
38. *Would multiple same-day interbank settlements be sufficient to facilitate faster availability of funds?*
39. *Is there a case for a real-time settlement system for low-value payments and how should it be provided?*
40. *To what extent would financial institutions' own systems need to change to allow faster access to incoming payments to customers' accounts? What would this involve and how could it best be achieved? Could the desired improvements be achieved by competitive pressures if financial institutions were forced to publicly disclose information on the timing actually achieved on payments? Would some form of mandated time limit for availability of funds be appropriate?*
41. *How strong is the demand for payment options that will provide availability of funds 24 hours a day, 7 days a week? What would need to occur to achieve this?*

6.3 Ease of Addressing Payments

A key element of the ease of use of payment systems is the process of providing details of the accounts to be debited and credited when a payment is made. The more difficult this process, the greater the transaction cost and the higher the risk that a payment might be misdirected, requiring costly manual repair, or even worse, resulting in loss of the transacted funds.

As discussed in Section 2, cheques can be very simply addressed using only the name of the payee, but the cost of this is a largely manual process for the payee depositing the cheque. Card payments could be thought of as the most user-friendly systems in this regard because neither the customer's nor the merchant's account details need to be entered manually; the customer's details are of course recorded on the card itself.

However, directing payments to businesses or individuals in other contexts can be problematic because it requires the payer to know the payee's account details, for instance the BSB and account number, and to enter them correctly. These issues have been a particular problem for government payments. The agency making the payment must have the correct account information for the individual in order to make an electronic payment. For less time critical payments, cheques currently can sometimes be a more reliable solution, while in some circumstances prepaid cards have been used.

Issues with correctly addressing payments have been dealt with for bill payments through the BPAY system, where the customer needs only enter a biller code and reference number printed on the bill. The industry is in the process of developing a system that would operate in a similar way for individuals. Another alternative that has been considered by the industry in the past, commonly referred to as 'credit eftpos', would allow a consumer to provide their details for an incoming payment by presenting an ATM/eftpos-enabled card. As discussed below, some fledgling person-to-person systems use a telephone number or email address as a reference to address payments.

6.4 Person-to-person Payments

Related to the problems of addressing payments, efficient person-to-person payments have been slow to develop in Australia. To date, there have been few effective electronic alternatives to the paper-based products of cash and cheques. Direct entry payments initiated through internet banking have been a reasonably popular method in recent times, but these suffer from the problems discussed in the previous section and funds might not be available until the next day. These payments are also simpler for remote transfers, where the payer might have easier internet access, than for immediate face-to-face payments (e.g. splitting a restaurant bill). This is of course becoming less of a constraint with the introduction of mobile phones providing internet access.

There are some fledgling person-to-person systems now available in Australia. For instance, PayPal offers this functionality, though, as a closed system, it relies on payments between PayPal accounts held by members. At least one bank also provides a system that allows payments to be made to other customers of the same bank using only a phone number and password. Payments to customers of other banks can also be made using this system, but the payee must log on to a website to provide account details before the payment can be processed through the Direct Entry system.

These examples highlight the absence of a user friendly, universal person-to-person electronic payment system in Australia. This absence is made starker by the existence of some mobile-based systems in developing countries, although these may reflect a greater willingness of consumers in these countries to trust relatively large telecommunications companies with what are effectively banking relationships. These systems also tend to be less user friendly when used across carriers.

6.5 Mobile Payments

One of the most active areas of innovation in payments globally is mobile payments. Mobile devices have appeal as payment devices because they are ubiquitous and are almost always in close proximity to the user.

The term 'mobile payments' is in fact used to encompass several different types of payments that can be made with a mobile device. These can differ with respect to the payment interface and the source of funding. The payment interface generally takes one of three forms:

i. Short Message Service (SMS) initiated payments, where an SMS is sent by the user to trigger a payment, for example for premium mobile or other services or from a stored-value system. Such models have been slow to take off in Australia and many other developed countries, presumably because alternative payment options, with financial institutions at the centre, are available;

ii. mobile internet payments, where the phone provides a means of accessing the internet, with payments made in a similar way to transactions using a personal computer. Services are often tailored to make them more suitable for a mobile environment, for instance with tailored applications. Examples are internet banking payments on a mobile device, mobile PayPal, or making mobile payments through any number of web-based services or specialised mobile phone applications; or

iii. contactless transactions, where a mobile device is placed in proximity to a terminal and transmits payment information using radio frequencies. Communication between the two devices can be one-way (giving the same functionality as a contactless card), or two-way, allowing more sophisticated services to be offered. In its simplest form, the contactless chips and aerials contained in contactless payment cards can be attached to, or incorporated into, a mobile phone for making standard contactless credit or debit card payments.

Mobile payments can be funded from a range of traditional payment instruments. For example, mobile PayPal may be funded by a linked deposit account, credit card or pre-funded account, while a contactless payment can be linked to a specific credit or debit card. Under these models, authorised deposit-taking institutions retain an integral role in the payments process.

In addition to traditional payment sources, mobile payments raise the possibility of telecommunications companies expanding their role as holders of stored value or providers of credit. For instance, in some models, payments made on a mobile phone are charged directly to the user's mobile phone bill, drawing funds from stored value on a pre-paid phone account, or a line of credit on a post-paid account. In Australia, mobile premium services are the principal example of such a model, but this is currently limited to digital goods and services. This model is more prevalent overseas and has led to concern among regulators about banking-like functions being undertaken by telecommunications companies.

Point-of-sale transactions are one area where mobile payments have not yet made inroads, but have potential to affect payments relationships significantly. Mobile systems have the potential to provide a more complex interaction at the point of sale than is currently the case with card payments. For instance, a range of traditional card-based payment options may be available on a single phone, allowing the customer to select the method used. This might, for instance, provide the benefits of a multi-function card, while still allowing consumers to choose the payment method used for a contactless transaction. These more complex interactions may also provide greater integration of other services, such as loyalty programs. It is also possible that mobile phones may allow internet banking services to become better integrated into point-of-sale transaction processes over time, although the lack of real-time functionality may be a constraint.

To date the Board has taken the view that there are no particular impediments to the development of mobile payments in Australia. Nonetheless, the Board is interested to hear other views on this issue.

Issues for discussion

42. *What form are mobile payments likely to take in Australia over the next five to ten years – SMS-based, mobile internet, contactless or some other form?*
43. *Are there impediments to the development of mobile payments in Australia? If so, what type of payments are being impeded and how?*
44. *Are there security issues particular to mobile phones that may impede adoption of some types of mobile payments in the future? Are there likely to be issues with interoperability of mobile payment systems?*
45. *Are there adequate standards to support the development of mobile payments in Australia? If not, what standards are lacking, what types of mobile payments are affected, and who should be responsible for setting them?*

6.6 Electronic Purse Systems

A number of other countries have in place widely used 'electronic purse' systems. These are typically reloadable, contactless, pre-paid cards that process transactions off-line to aid transaction speed. Examples are the Octopus system in Hong Kong and Suica in Japan, both of which are transport ticketing systems that have broadened into general use payment systems. The transport ticketing base of these systems seems to have been critical to their development as broader payment mechanisms by ensuring a wide cardholder base, making acceptance more attractive to merchants. There appear to be relatively few cases where electronic purse solutions have successfully developed independently.

While over the years there have been some trials of electronic purse-type systems in Australia, none have progressed to widely commercially available systems. This may be a reflection of the relatively slow development of chip-based electronic ticketing systems in major cities, different approaches to ticketing from state to state, or a level of satisfaction with existing card payment systems.

6.7 Standards

The use of common standards has a number of benefits, including: lowering the barriers to entry for new firms; increasing the size of the market by enabling firms to compete across borders or for the business of multinational companies; providing greater certainty for users and producers of software and hardware and fostering innovation by reducing the risk of investing in a redundant standard. Of course, there are costs to implementing new standards, as they often require new software, new hardware, and retraining for staff. There are also potential difficulties in integrating new standards with other standards and systems used within an organisation.

Section 5 outlined potential difficulties in establishing standards at the industry level. The academic literature, and a number of parties with which the Bank has consulted, indicate that there are circumstances where external intervention to either set a standard, or to force industry to set a standard, can be beneficial. The Board is open to the notion that innovation may be supported by it taking this role in some circumstances. While standards apply in a number of areas relevant to retail payments, the Board sees two immediate areas for consideration – messaging standards and security standards.

The Australian standard for card payment devices, security and messages, AS 2805, was pioneering, having been developed before many relevant international standards. In some cases AS 2805 influenced later international standards. However, international standards are now being recreated to take advantage of the advent of Internet Protocol networks and XML (eXtensible Mark-up Language). With the increased globalisation of finance and business, there is also a push for the standards to be used across business areas and used more consistently across jurisdictions. To that end, the International Standards Organisation (ISO), with SWIFT, has developed the ISO 20022 framework for payment messaging standards.

ISO 20022 is a methodology for constructing message standards that are interoperable across industries and jurisdictions. Messages are constructed using a set of internationally agreed data definitions, known as message elements (individual fields) and message components (groups of elements that perform a specific function). These message components and elements, their description, and information on how they should be used are stored in the ISO 20022 repository, maintained by ISO. This then provides a reference for constructing message standards. Any message constructed using the repository can be understood by all ISO 20022 users. ISO also publishes approved message standards in the repository. In addition to the construction of new standards, ISO 20022 can be used to translate between standards so as to enable interoperability between different payment systems.

ISO 20022 is emerging as international best practise for payments messaging. Examples of its adoption include:

- SWIFT helped to draft the original ISO 20022 standard and has used ISO 20022 to create new message formats;
- the European Payments Council chose ISO 20022 global message standards as the payment message standard for the SEPA Direct Credit (2008) and Direct Debit (2009) transfer systems. The Direct Credit and Direct Debit systems can be used for cross border and domestic payments;
- new remittance message standards that allow up to 9 000 characters to be sent along with payment will begin operation in CHIPS and Fedwire in the United States in November 2011. The new message standard includes an unstructured field that can carry the ISO 20022 format. The message has also been mapped to ISO 20022. The Federal Clearing House and CHIPS have also worked with SWIFT to map their bank and customer transfer messages to ISO 20022 data elements;
- ISO 20022 is being used as a bridging standard to enable non-urgent cross-border credit transfers between banks in different countries under the International Payments Framework (IPF). IPF began operation in 2010 for US-European transactions, including in pound sterling and Swiss francs. Work is underway to expand IPF to include South Africa, Brazil, Canada and Australia; and
- an international project is underway to develop a common global implementation standard for ISO 20022 messages for corporate-to-bank payments.

Undoubtedly adoption of the ISO 20022 framework would improve compatibility of Australian systems with overseas systems. It would also allow for greater transmission of data with payments and make it easier for foreign players to enter the Australian payments system. APCA is in the process of developing an ISO 20022 framework for Australia but is not requiring its adoption. The question, therefore, is whether a more aggressive strategy is required, either requiring an industry shift to international standards or ensuring that participants are at least able to accept payments compatible with international standards.

Another area for consideration is whether there is a case for greater co-ordination on security standards. For instance, card schemes generally set their own rules on fraud reduction innovations, such as mandated adoption of chip at point-of-sale terminals and in ATMs, mandated use of PIN for point-of-sale transactions

and use of password-based verification systems for online transactions. Such decisions raise two issues. First, they impose obligations on third parties, who may have to bear a considerable cost in upgrading equipment, but have little say in the decision-making process. Second, to the extent that such changes place a burden on end-users, there may be an incentive for schemes to hold off in the expectation that another scheme may move first, producing a short-term competitive advantage, while also 'breaking the ice' to reduce resistance somewhat with users. Together these factors may result in security improvements not being implemented in an optimal way. There may be a case for a more co-ordinated standards-setting process for security measures to avoid these problems.

Issues for discussion

46. *What is the case for moving to ISO 20022 compliant standards for Australia's retail payment systems? What is the preferred process for doing so?*
47. *Should all new payment systems be required to adopt ISO 20022? Should existing systems be required to do so?*
48. *To what extent are other standards, such as device standards, an impediment to competition and innovation? Is this justified?*
49. *How should compliance with industry standards, both by new entrants and incumbents, be monitored?*
50. *Is there a case for greater industry co-operation on the setting of security standards for retail payments? If so, how should this be achieved?*

6.8 Future Trends

The discussions in this paper have focused on issues and trends that are evident or easily foreseeable at the time of writing, which may imply a medium-term rather than a long-term time horizon. The Board is also interested in possible developments further ahead, the implications for the payments system and possible opportunities that these might present. In particular, the Board is interested in whether there is potential for more fundamental changes in payments system architecture that might simplify entry, improve interoperability and increase both competition and innovation. Similarly, it is interested in whether new products that represent a fundamental break from current or prospective systems are likely to emerge. To the extent that it is possible to contemplate such changes, it may be appropriate for the industry to position itself now to take full advantage of them.

Issue for discussion

51. *Are there any significant changes in the payments landscape in prospect that have not been considered by this paper, for instance in terms of architecture or significantly different payment products? What will be the implications of these changes? Are there actions that should be taken now to take full advantage of these changes?*

7. Early Views and Priorities

This paper sets out a wide range of issues related to innovation and the Board welcomes input on all of them. However, in order to focus discussions, this section identifies some of the key priorities from the Board's perspective and some early views on approaches that might be useful in some areas.

In the Board's view, a key priority is ensuring that the governance structure for the industry is one that supports innovation. An important consideration is the role the Reserve Bank and the Payments System Board should play in these arrangements. The Board is seeking views on the capacity of industry-driven governance to produce the level of innovation that is in the public interest. If this capacity is currently deficient, it is interested in whether broader representation in governance arrangements could overcome these constraints, and how, and through what body, this representation could occur. The Board also sees some justification for considering the current structure of rules for clearing and settlement given the evolving landscape for retail payments.

The Board sees a second important area as the provision of payments infrastructure. An important question is whether the current structure of Australia's main payments networks best serves the public interest, acknowledging that centralised arrangements typically prove to be more conducive to innovation. This paper has raised the potential benefits that hubs can provide and seeks views on whether and how they might be used to greater advantage in the Australian payments system. Separately, with the speed of retail payments in mind, it has raised the possibility of real-time (or close to real-time) settlement arrangements for low-value payments. The Board does not, at this point, have a position on either of these issues, but acknowledges the contributions both could make, which of course need to be weighed against implementation costs. It seeks views on both the benefits and costs of these approaches.

While the Board is open-minded about how innovation gaps identified in Section 6 should be addressed, it nonetheless sees a number of obvious constraints on development of some of the desirable solutions. Key examples are:

- next-day settlement of retail transactions is an impediment to more efficient retail payment systems, for instance the provision of faster access to funds for payees. The Board sees a strong case for a move to multiple same-day settlements of low-value transactions. The Board believes that consideration should also be given to ways in which better payments access can be provided over weekends and public holidays;
- the capacity of financial institutions' systems to uniformly make funds available in a timely fashion is also a constraint on the provision of more efficient retail systems and should be addressed. One question is whether a move to same-day settlement of retail transactions, combined with transparency of the timing of availability of funds, would apply sufficient competitive pressure to provide faster availability of funds, or whether other measures would be necessary to achieve this end;
- the Board is concerned that the industry to date has not been able to provide for additional data to be carried with payments, despite a clear demand from businesses for this service. It believes that providing this capacity should be a priority; and

- closely related to this is the adoption of ISO 20022 message standards. While the Board acknowledges that the industry is working on the specification of ISO 20022 compliant Australian standards, it believes that the Australian industry should make the transition to such standards as soon as practicable.

Finally, the Board is conscious that the major banks and BPAY have been working for some time on a new, hub-based retail payments system, referred to as MAMBO. For commercial reasons, relatively few details of the MAMBO system have been made publicly available, but the system is expected to be able to address a number of the gaps identified in Section 6. The Board welcomes the implementation of systems such as MAMBO that address some of the unmet needs of end-users. It does not, however, see MAMBO as a substitute for all the changes discussed above. In fact, in some cases they will clearly be complementary.

8. Next Steps

This paper has raised a wide range of issues related to innovation in the payments system and set out a number of questions for discussion. The Board now invites input from interested parties on these and other questions considered relevant. Formal written submissions by no later than 31 August are welcome and should be sent to:

Head of Payments Policy Department
Reserve Bank of Australia
GPO Box 3947
Sydney NSW 2001

or by email to pysubmissions@rba.gov.au.

All submissions will be posted on the Reserve Bank's website (www.rba.gov.au). Parties making submissions will be provided with an opportunity to discuss their submission with Reserve Bank staff. The Bank also anticipates hosting targeted forums later in the year to allow interested parties to come together to discuss the issues.

The Board intends to issue its final conclusions to the Strategic Review around the end of 2011 or early 2012.

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