VOCALINK
safer payments, smarter partner

Reserve Bank of Australia

Strategic Review of Innovation in the Payments System

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Authorisation

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Content

Introduction

VocaLink is pleased to respond to the Reserve Bank of Australia's consultation document concerning the Strategic Review of Innovation in the Payments System.

In responding to this document VocaLink has drawn on its experience of introducing and supporting innovative changes in payments systems in the UK, Continental Europe and Scandinavia to apply to the Australian context.

In writing this response we have aimed at brief and opinion based responses, given the excellent discussion of possible options in the "Issues for Consultation" document. We have attached supporting information as appendices where we believe it may be beneficial to understanding some of the issues discussed.

At the time of writing, VocaLink is finalising some further research and study material on the demand for innovative ways to pay in a number of countries. We will, of course be happy to provide these to the RBA in due course, although this will be outside the deadline for receipt of submissions to this consultation.

The decline of traditional payment methods

2.1 The decline of cheques

Response to 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?
	The current APCA consultation on the future of cheques is unlikely to uncover hidden areas of cheque usage, given the thorough study by Edgar Dunn and Company. However, experience from the UK suggests that there are some low volume but highly sensitive user groupings (in the UK the elderly and advocacy groups concerned with the elderly and financially disadvantaged) which will form a group that is firmly resistant to change. Whilst small in number (approximately in line with the 5% stated in the EDC survey conducted for APCA in Australia), this group is well represented and can claim real need. In the UK this group has been prominent in bringing about the intervention of the UK government to reverse the roadmap for closure of the cheque clearing and proposed changes to the governance of the Payments Council (to place greater power in the hands of users). Awareness of this market is critical and an approach which assumes the continuation of cheques (but following a streamlined clearing process – see question 3), will avoid such confrontation.

2	Could the decline in cheques be managed by pricing cheque use in a way that provides better signals to users?
	Yes – although pricing needs to be sensitive to the use to which the cheque is put, for example • It makes sense that high value B to B cheques should be priced according to the risk and care needed to process such payments, and the additional value that they confer in contractual situations. This charge should be in excess of the alternative electronic instrument, (e.g. single electronically initiated real-time payments). • A restricted number of cheques, addressing the "special needs" groups described in answer 1 may could be provided to retail customers by their banks at an equivalent cost to a credit transfer, or BPay payment, in order to avoid claims of unfairness (i.e. sufficient cheques to pay basic bills). Beyond this number incremental charges could be made on "discretionary" cheque use.

3	Can a case be made for reforms to make cheque processing more efficient and therefore sustainable at lower cheque volumes?
	In the UK, VocaLink is investigating the potential to provide core clearing of cheques across our real-time immediate payments infrastructure (as used to support the Faster Payments and Link Schemes). Such an approach might be considered in Australia. The major cost – in physical transport – would be avoided, whilst clearing and settlement can be combined with existing services. Such a solution, which is likely to involve some form of dematerialisation at the point of cheque presentment, will enable cheque clearing times to be reduced, and improve the certainty and usability of the instrument, as well as reducing the overall cost of the cheque clearing such that individual transaction costs can be at least maintained in the face of falling volumes. Critical considerations are: • the degree to which the actual paper instruments will need to be enhanced to support distributed authentication and capture (versus making the cheque "too good" such that its natural decline is arrested); • the availability of a suitable inter-bank clearing mechanism (preferably real-time to enable rapidity of clearing at both bank branch and PoS, and • how inexpensively "lightweight" image capture technology can be integrated at the point of sale to reverse the trend of cheque non-acceptance by retailers.

4	Could institutions unilaterally withdraw from the cheque system, leading to specialisation by a small number of institutions?
	This is feasible. Given that the range of instruments should form part of the customer terms and conditions, support for cheques could be specifically excluded, given sufficient notice. A number of “internet only” banks already operate on this basis in the UK and other European countries, although usually with an “arrangement” to enable cheques to be paid in via another provider. This would also provide an opportunity for specialist cheque service providers to provide encashment or issue of occasional cheques for customers of banks not offering this service. Any regulatory steps necessary to provide the opt-out should be planned and communicated publicly.

5	Is there a case for phasing out cheque clearing over time? How could that be managed while ensuring that satisfactory alternatives are developed?
	The steps above provide a framework, i.e.: • migrate cheques to a lower cost infrastructure which enables clearing to be consolidated with electronic payments clearing • enable banks to “opt out” of cheque clearing (whilst ensuring service providers exist for those with a legacy need to use cheques) and • push forward on the development of alternatives, including efficient national schemes for mobile and on-line payments, and bespoke mechanisms for high criticality users such as Government, Superfunds and house purchasers.

6	Should government agencies’ policies on payments be used to influence cheque usage?
	The approach take by government agencies is critical to minimising cheque usage. Given that the population of Australia is ubiquitously banked, there is effectively no rationale for any government pay-out (welfare, healthcare subsidies, supplier payments etc) to be made other than by electronic means, except in very exceptional circumstances. However any replacement payment mechanism must offer additional benefits to that which it seeks to replace, in order to drive uptake and acceptance. Thus replacing cheques with an electronic mechanism but which is also subject to a clearing cycle time (even as little as one day) may not be seen as progressive. Use of Immediate Payments type services (instant credit transfer) over on-line and mobile channels will provide significant benefits as a replacement to cheque payments for emergency disbursements, welfare payments etc.

7	Should the approach to cheques be determined by individual institutions, determined collectively by the industry, or determined by the Payments System Board?
	Following the example of the UK, it is important that a multi-stakeholder approach be taken in deciding the future of cheques. The consultation by APCA is a good start, but key stakeholders in the user community and especially government must be involved in the sign off for the way forward.

2.2 Cash replacement

Response to issues for discussion

8	Are there any impediments to the development and adoption of products to replace cash?
	The replacement of cash requires payments instruments to be available that have the following characteristics: • Universality – virtually any person or organisation can either pay or be paid (peer to peer model), and can support a wide range of payments values. • Convenience – it is easy to gain access to the mechanism and simple to use in a variety of situations and through a variety of channels • Transfer of value – must be immediate such that, once paid, the beneficiary can use those funds to make further payments • Availability – such a service must be available 24X7 Whilst some available mechanisms address some of these characteristics, the lack of a real-time peer to peer payments mechanism will significantly hinder the reduction in cash usage. For example whilst card systems are available 24X7, and have real time authorisation and support on-line (e-commerce) and off-line (PoS) channels, they are basically asymmetrical in operation (they support person to merchant transactions, not peer to peer), do not transfer value immediately, and support a narrow range of payments – both high and very low values are not well supported. Given these gaps in the payment instruments applicability, an individual will need to carry cash to use where the card can not be used (likewise he or she may carry a chequebook for other situations), and leakage will occur. Attempts to fix these gaps generally lead to point solutions - a good example being transit cards such as Octopus in Hong Kong (developed by Vix ERG of Perth). Octopus has used its base in the transit systems to expand outwards as a cash replacement tool for most of the purchases a commuter is likely to make such as snacks, newspapers mobile top-ups and groceries. Within these confines it is a fairly universal real-time payments instrument for low-value payments. However a large element of this acceptance is down to the specifics of Hong Kong's dense population and universality of the transit system. Similar transit smartcards have not moved outsider the transit domain in the same way where the consumer experience is different. By contrast, the strategy of the London transit card operator "Oyster" is to move from issuing dedicated cards to enabling (standard) contactless bank cards to be accepted at the turnstiles.

9	Is there any case for public intervention in cash replacement?
	In the above two transit card cases (although limited in application), it is noted that public intervention in the form of local transit authorities was necessary to start these schemes. In thinking about a wider and more holistic scheme (without a single imperative like transit ticketing), the role for public intervention is stronger: • Cash is universally relied upon, so any replacement must be similarly robust (we would i.e. possessing the characteristics mentioned in box 8, above) • Cash is effectively free at the point of use, and so public intervention may be required to ensure that any replacement is fairly priced and not used (unreasonably) as a revenue opportunity by financial institutions • Much of the business case relates to increased economic efficiency (see the CEBR/VocaLink analysis of 2008 in the attached Appendix A - Real Time Payments model), which is to the public benefit. This may be offset by multiple private investments which need somehow to be encouraged. • Ensuring the needs of all stakeholder groups are addressed.

The environment for innovation in the Australian Payments System

Response to issues for discussion

10	Do current governance arrangements adequately promote payments system innovation?
	Collaborative governance arrangements need to focus on providing the current underlying infrastructure and environment for innovation – rather than trying to deliver the end innovation in itself. This would include standards (for technical interoperability, access to basic payments systems and basic customer proposition, establishing the need and licensing collaborative infrastructures (such as ACHs)). The public good must also be represented, so representation from the RBA in scheme bodies would appear to be appropriate. However, more flexibility should be given to market players to develop customer propositions outside the core collaborative space, for example in providing mobile payments services or third party access to core clearings – governance should extend to core interoperability standards for such services not prescribing exactly how the system should work.

11	Are the needs of payments system users and non-ADI payment service providers adequately considered indecisions about the direction of the payments system?
	Whilst consultation of such groups through APCA forums is welcome, more independence and linkage to public bodies would create greater imperative for change. Forums which inform the PSB directly should therefore be considered.

12	Are there ways of altering current governance structures to make innovation easier?
	See 11, above.

13	Are there ways of altering current governance structures to take more account of the views of end-users?
	See 11, above.

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?
	Any collaborative development will require strong steerage from an independent arbiter with the public interest central to its ambition. Whilst it should consult widely, such a body should be largely independent of sectional interest and not subject to reaching a committee decision.

15	How could such a body have the capacity to reach decisions across a diverse group of members?
	No comment.

16	Could such a group make binding decisions and how could they be enforced?
	No comment.

17	Could formalisation of a broader mandate for APCA, coupled with broader representation, provide better industry-wide outcomes?
	From a consultative perspective yes.

18	What role should the Reserve Bank and the Payments System Board play in setting the reform agenda for the industry?
	To consult widely and act as an independent decision maker 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?
	No comment

3.1 Structure of clearing and settlement rules

Response to 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?**
	• The current structure allows competitive products to be developed by banks, as long as the basic clearing and settlement remains the same. This does however restrict the scope of innovation. • The nature of the bilateral clearings renders introduction of a new universal service more difficult, since every change must be replicated across multiple banks. • The adoption of new products by non-ADIs etc, requires interfacing with multiple banks, (although this will be simplified in time in part through adoption of the COIN) • The process could be simplified by establishment of "hubs" both to effect common services such as multilateral clearing and settlement, as well as to enable the direct connection of second tier banks, non-ADIs and value added service providers.

21	**Is the current structure of rules applied to payment systems, including the five APCA clearing streams, the most appropriate?**
	There may be opportunities for simplification of the rule set, to fewer types of clearing with more optionality for purpose specific variations of the service (fro example batch or single payment).

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?**
	No comment.

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?**
	Yes – as stated to answer to question 21, above.

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?**
	The following developments would enable easier access for new payments service providers. • Definition of system authentication standards to enable third parties to access the payments system. • Simplification of settlement rules both for ADIs and non-ADI PSPs using an ADI. • Use of a central payments infrastructure (hub) • Move to real-time payment clearing services to align to the transactional needs of new payment service providers who are changing the payments landscape (e.g. wallet top-ups, mobile peer-to-peer payments) • Direct technical access to payments system for new banking entrants • Use of ISO 20022 as a core payments standard, across all services

25	**Do existing clearing arrangements allow sufficiently easy access for new participants? If not, what could be done to improve this?**
	The major impediment is the lack of a central infrastructure (one stop shop), to connect to.

3.2 System architecture

Response to issues for discussion

26	Could greater use of hubs improve efficiency, access and innovation in the Australian payments system?
	In our view this is the major deficiency in the architecture of the existing payment systems. The one exception being RITS.

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?
	We believe that a hub would be useful in enabling transactions to support many of the above objectives: • new electronic payments instruments • connection of new entrants to the payments clearings • supporting complex transactions involving specific end users as responding third parties • facilitating migration of institutions from existing domestic Australian standards to new (ISO20022) standards by providing conversion facilities • enabling real-time multilateral net settlement of all transactions (either singly or in parcels between two participants) not sent via the RTGS system. Please see Appendix B for an example of a real time hub infrastructure – UK Faster Payments.

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?
	We believe hubs represent best practice, especially for the connection of new players and new channels (e.g. mobile), as well as to co-ordinate the migration from existing to new services. The operation of a hub within a heterogeneous bilateral and multilateral clearing environment is also very feasible.

29	What type of ownership, governance and management arrangements would be desirable for a hub?
	We believe licensing of the hub should be the responsibility of the PSB (possibly delegated to APCA), but that a hub should be run as a semi-commercial entity within a minimum rule set. This would enable it to progress commercial innovation to its services (in a similar way to card schemes) where those services are beyond the core clearing and settlement function. Oversight of clearing and settlement operations would lie with the RBA. Additionally, and until the hub is fully established, the RBA might wish to have a direct influence within the management of the hub's operating company to ensure the fitness for purpose of the rules established.

Innovation gaps in the Australian Payments System

Response to issues for discussion

30	How widespread is the demand for the innovation in question and how significant would the impacts be?
	We believe the market for new payments instruments – especially mobile payments and other forms of instantaneous payments is growing. Please see Appendix C which details research into Immediate Mobile Payments.

31	Are there any specific impediments to that innovation occurring, e.g. barriers to entry, co-ordination problems, technological constraints?
	The lack of central clearing mechanism for mass payments, with a simplified model for connectivity is the most pressing omission in the payment systems architecture. We believe that the nature of payments innovation will require any central infrastructure built now to use: • A "rich" message standard, i.e. ISO20022, both to cope with increased data requirements and to enable compatibility with widely available bank payments solutions from vendors such as Clear2Pay, Temenos and Oracle. • An immediate payment (i.e. real-time net settlement) model in order to support new payment types and channels (such as mobile and on-line) which will increasingly dominate. As described above, the current bilateral nature of payment arrangements means that a new entrant will have to use services provided by an existing player or make many new connections to participate in the payments system.

32	Is there a case for public intervention?
	The case for public intervention is based on the inevitability of the requirements for services which meet the profile in question 8, above. Our research indicates that such services will be demanded by customers and that individual providers – existing players or new entrants – will do their best to provide them. Uptake of PayPal's services (on-line and mobile) is highly indicative of this. However, developed without some public co-ordination this process is likely to take longer and be more costly than if key interventions were made. The capability is probably already available, but lacking direction – for example the number of mobile payments pilots hosted by Australia's "big 4" banks have already generated a body of experience which could guide the implementation of such a service.

4.1 The transmission of data with payments

Response to 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?**
	We believe use of a rich format such as ISO20022 will solve some problems, but an additional feature is to provide for a "responding third party" model, which enables the core payments system interacting with another (payments user) system to access and act upon non-payment data. Real-time linkage between two such systems can be best achieved via a real-time central infrastructure, as described above.

34	**What role should messaging standards, such as ISO 20022, play in any solution for transmission of additional data?**
	ISO20022 provides a framework which enables easy interoperability with both modern banking products and those available within corporates. As such it is the default choice for all new payments developments.

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?**
	Real-time payments, if adopted, will enable superannuation payments to be instantly rejected in the case of a closed or moved account, such that the fund operator can start investigations instantly. ISO20022, if adopted, will mean superannuation payments can be standardised across domestic Australian recipients as well as those pensioners domiciled oversees, with the need only to add to data for the overseas routing, rather than using a different format – enabling straight through processing.

4.2 The timeliness of payments

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?
	We believe that instantaneous payments will be required to address both new electronic instruments and the elimination of cash.

37	What new systems or enhancements to existing systems would be required to achieve more timely payments? How could these innovations be achieved?
	As describe above, the implementation of a central real-time net settlement service for mass payments will be key to meeting current and emerging needs. Such systems are in place in the UK, South Africa, India and Brazil, and are under development in a number of Asia Pacific markets and under discussion by others including he Federal Reserve in the United States.

38	Would multiple same-day interbank settlements be sufficient to facilitate faster availability of funds?
	There are several settlement models (i.e. interfaces with the RITS system) that could be employed to support an Immediate Payments system. The preferred model relies on pre-funded accounts in the RITS system which are mirrored in the Immediate Payments systems and “synchronised” at several points during the day. The reciprocity inherent in the netting will minimise the funds flows at these synchronisation points. Please see the attached Appendix D “IPS Settlement Risk Manager” for further information.

39	Is there a case for a real-time settlement system for low-value payments and how should it be provided?
	See above.

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?
	Connecting banks should be able to debit and credit customer accounts in real-time. Most modern retail banking packages allow this, given the need to support debit authorisation. We would support mandating retail accounts to be updated in real-time as a first (and more achievable step), with business accounts (which are less likely to be real-time enabled due to the absence of a debit card facility) allowed some leeway for compliance. Experience in the UK demonstrates that it is best to be transparent around the performance of participants in all aspects of new payment services. Consumer websites will “crowd source” the information anyway. For example, during the UK Faster Payments implementation, the performance times, allowable item limits etc., for each bank was available on martinlewis.com before they were made available to the scheme implementation committee.

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?**
	Please see Appendix C which details research into Immediate Mobile Payments.

4.3 Mobile payments

Response to 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?
	It is our belief that there will be a wide range of mobile payments offered in Australia over the coming years, driven by the widespread focus from e-commerce to m-commerce. • NFC will be promoted potentially by new entrants (likely to be MNOs) to move into the PoS space, using wallet applications for low value payments (payments actually being reflected as a debit to the payers mobile billing account). • PoS will also begin to fragment with non-NFC mechanisms such as QR codes being used to communicate information between phones. • Australian versions of Square and I-zettle (providing low end cards acceptance over a mobile phone) are very likely to be introduced within the next year/eighteen months. • On-line payments (e.g. p-to-p and BPay) will all be capable of initiation from mobiles. • Bespoke payments will be developed by suppliers like PayPal, Google etc., to support retailers at both the on-line and physical point of sale. • Decline of some early adopter niche mobile initiation products (supporting gaming, digital content etc) in favour of the above products. • SMS will be used less and less as Smart phones and Feature phones dominate the market.

43	Are there impediments to the development of mobile payments in Australia? If so, what type of payments are being impeded and how?
	Impediments include the absence of customer authentication standards and a suitable real-time infrastructure to support mobile payments. Given the current structure it is unlikely that a universal interoperable account to account service will be introduced. Services that are best provided from a central infrastructure such as routing on a proxy (e.g. payee's mobile phone number) may prove hard to implement. This kind of general purpose mobile payments service would be of great value in cash and cheque replacement. A mobile payments service enabling instant transfer of value between accounts at different banks is unlikely if a real-time infrastructure is not put in place.

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?
	See 43 above.

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?
	This is an emerging field. We would recommend that international standards are adopted where possible, for example ISO20022, on the basis of the continuing adoption of this format; the GSMA standards for NFC payments and the work of the Mobey Forum on remote mobile payments give some guidance in this direction.

4.4 Standards

Response to 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?
	The case for ISO 20022 has been made well elsewhere. It has emerged as a standard that has broad international commitment, and has been significantly "road tested" through the SEPA implementation in Europe. Its benefits include: • widespread availability of "off the shelf" solutions for payments and back office services; • increased data content capability and • interoperability potential (with other services/service providers). Introduction of ISO 20022 will however place a burden on all PSPs (ADIs and others) such that a phased migration may be required to enable: • banks to migrate according to differing technology replacement timetables within each institution and • individual types of traffic to be migrated according to priority (e.g. direct debits, credit transfers) The value of a payments hub in assisting this migration is that it can be built with ISO20022 as a core capability, enabling early adopters to migrate to the new format, whilst providing a conversion capability that can provide output to other banks in the old format, (or vice versa). The hub can also provide a single resource for making truncated data (i.e. extended data included in the ISO20022 format but not accommodated within the legacy format) available to the beneficiary bank by alternative means, such as via a secure website. Such transitional facilities would be both difficult and expensive to deliver on a bilateral basis.

47	Should all new payment systems be required to adopt ISO 20022? Should existing systems be required to do so?
	Yes, in due course, and with the exception of card systems.

48	To what extent are other standards, such as device standards, an impediment to competition and innovation? Is this justified?
	No comment.

49	How should compliance with industry standards, both by new entrants and incumbents, be monitored?
	For format standards compliance, the use of a central hub can monitor and ensure the quality and standardisation of use for payment formats, according to usage rules that should be defined by an industry body such as APCA. Standards applicable to securing the customer interface are more complex, and care must be taken to avoid overly prescriptive format which could both inhibit innovation and place excessive burdens on participants. An ideal system would include: • Establishment of core principles by the governance authority for the payments system • Self assessment by those owning the customer interface • Oversight/audit by a competent and independent third party to assess any weakness

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?**
	See answer to 49, above.

4.5 Future trends

Response to issues 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?**
	The paper has very good coverage of current and emerging trends in payments. We believe the future will be shaped increasingly by the actions of non-traditional payments [providers, particularly in the e-commerce and m-commerce space. These non-traditional actors include Mobile Network Operators, large retailers such as Amazon specialist payments providers such as PayPal and even social networking providers like FaceBook (with their own virtual currency). The challenge for existing payments systems, (which are to some extent used by all new entrants) will be to remain relevant and connected to all these new players. To a large extent this will depend on the effectiveness of the payments system (Banks, infrastructures) to provide the type of core clearing services which meet the demands of these new players, and ensure that no alternative end to end mechanism is developed. To a large extent this will mean the provision of cost effective and easy to connect real-time systems.

Appendices

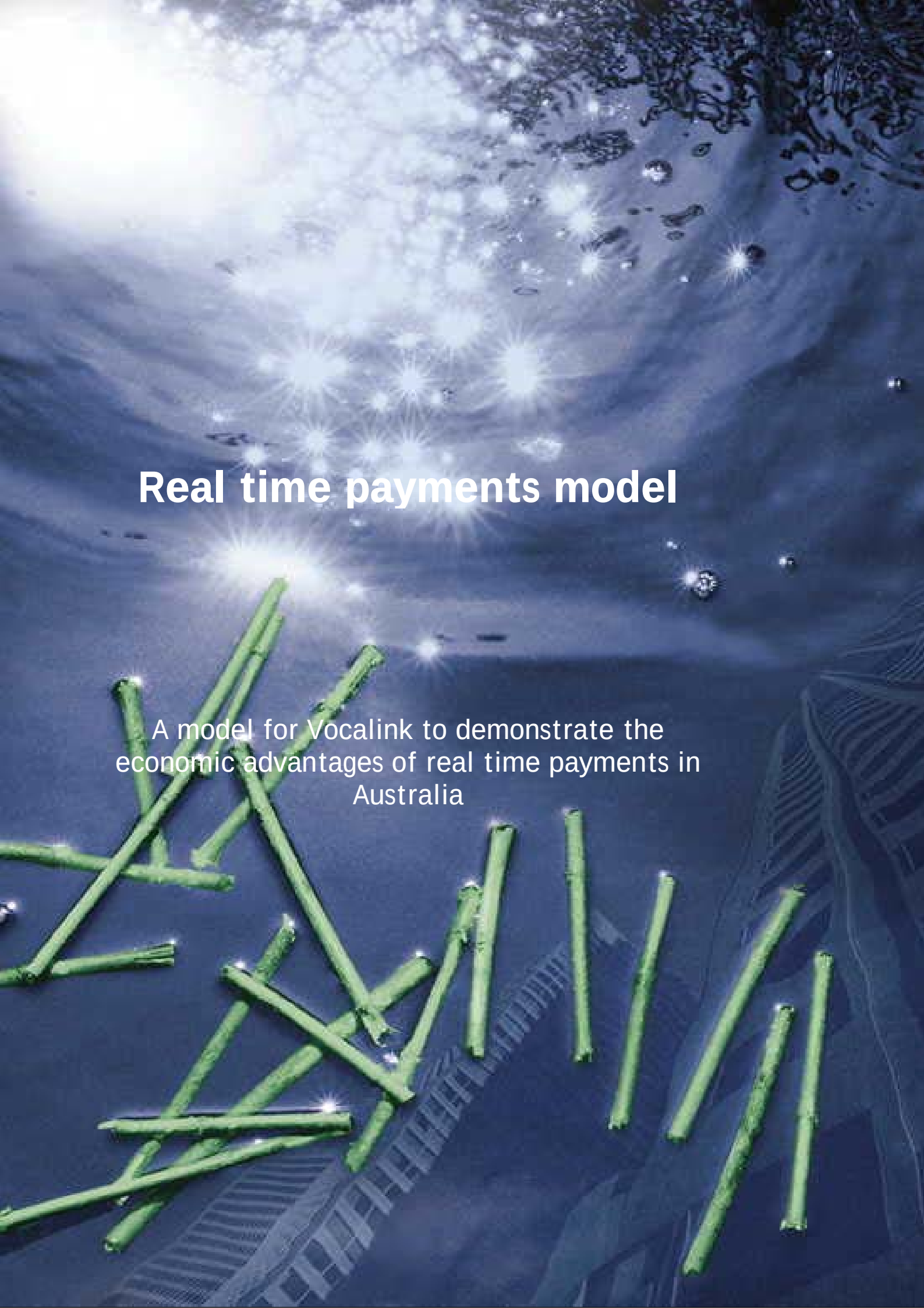
Strategic Review of Innovation in the Payments System

Final: 1.0

Content

Appendix A – Real time payments model

This appendix contains the CEBR/VocaLink 2008 analysis that highlights the increased economic efficiency of a real time payments model. It supplements the information provided in our response to question 9.



Real time payments model

A model for Vocalink to demonstrate the economic advantages of real time payments in Australia

This report is published by VocaLink as part of its continuing commitment to innovation in payment systems.

This report has been produced by **cebr,** an independent economics and business research consultancy established in 1993 providing forecasts and advice to City institutions, government departments, local authorities and numerous blue chip companies throughout Europe. The contributors to this report are Charles Davis and Douglas McWilliams.

London, May 2008

CONTENTS

1 INTRODUCTION AND SUMMARY

1.1 Objectives of the study

This study aims to demonstrate the economic impact of introducing faster payment systems in Australia. Payment systems connect buyers and sellers, deliver the finance for key projects and ensure a huge range of transactions across the economy can take place. Consequently, payment systems are of fundamental importance to the functioning of the economy and efficient payment systems can play a key role in promoting economic growth and delivering productivity improvements. In Australia there were more than 11 billion individual payment transactions in 2007 alone.[1]

In this study, we model how an improved, more efficient payment system benefits the economy through delivering productivity improvements. We also consider how the investment in payment system infrastructure provides a boost to economic activity in Australia. At the outset, it is important to emphasise that quantifying the benefits from real time is a challenging exercise and we suspect that a significant proportion of the total benefits available will not be captured.

1.2 Key findings

The key findings in this report are:

- Total annual cost savings from productivity improvements are equivalent to up to 0.12 per cent of Australian GDP in 2020
- In the long run, real time the productivity improvements from real time payments boost Australian GDP by up to 0.18 per cent
- The annual cost savings from the reduced costs of managing payments and switching to more efficient payment are estimated to be between Aus $586 million and Aus $678 million in 2020
- The cost savings from reduced failed payments due to real time are in the range Aus $612 million Aus$1.136 billion in 2020
- Cost savings from the reduction in fraud are more modest Aus $5 million in 2020
- Improved efficiency for consumer and small and medium sized enterprise are estimated to produce Aus $116 million savings in 2020

[1] Reserve Bank of Australia (2007) Household Payment Patterns in Australia

1.3 Summary of report

Chapter 2: Australian Payment System

In Chapter 2 we study the current structure of the Australian payment system market. We consider the differences between bilateral and central infrastructure systems in the context of understanding what real-time payments are and the implications they have for the economy. Real time payments are considered as the next generation of payments with global applicability – we consider how they work and the potential they offer.

Chapter 3: Methodology

In Chapter 3, we discuss the theoretical literature on payment systems and how they can be modelled. We introduce a framework for analysing the costs and risks in a payment system. We consider the effect that real time payments will have on the trade off between risks and costs and the productivity improvements that will result from being able to make payments in real time.

Chapter 4: Micro analysis and results

In Chapter 4, we present the analysis and results. We consider a base case scenario in which real time payments are not introduced. We then look at two scenarios for the Australian payments market following the introduction of real time payments. We present our findings on the extent to which real time payments will reduce costs in Australian payment systems through various channels: reducing the cost of managing payments, substitution effects from a shift in transactions, increased user efficiency, the reduction in failed payments and the reduction in fraud. We also consider the infrastructure investment involved.

Chapter 5: Macro analysis and results

In Chapter 5, we show how the cost savings from productivity improvements will feed through to the Australian economy, based on the Australian Treasury macroeconomic model.

Chapter 6: Conclusions

In Chapter 5, we summarise the key findings of the report and present the overall benefits and savings that real time payments will bring.

2 AUSTRALIAN PAYMENT SYSTEM

In this chapter we aim to set out the characteristics of the incumbent Australian payment system. We begin by explaining the difference between the bilateral payment system that currently predominates in Australia and a central infrastructure payment system. We then study the make up of the current Australian system. Finally, we introduce real-time payment systems, explaining how they differ from the existing payment models and discuss why they offer the potential for a revolution in payment systems.

2.1 Bilateral payment systems

Australia mainly operates with payments being processed by payer and payee banks through connections between the two: a bilateral payment system. Each participant in the system has a separate link with each other participant. Participants pass payment messages between one another through the series of bilateral connections. One major problem associated with of bilateral systems is that they become more difficult to manage as the greater the number of participants and hence links need to be established. New participants in the system have to establish connections with each individual participant, whereas in central infrastructure systems just one connection to the network switch would be necessary. Secondly, bilateral infrastructure may be difficult to upgrade or innovate due to the large number of independent linkages within the system. These coordination problems may undermine the capacity of the system to innovate and ensure network efficiency.[2]

2.2 Centralised payment systems

In contrast, centralised payment systems involve participants having multilateral connections to a central infrastructure or switch. Each participant in the payment system this needs only one connection to join the system.[3] Central infrastructure systems can allow more scope for innovation since the coordination problems that arise in bilateral systems do not exist. With central entity, collective decisions to modify or enhance services can be implemented more quickly and cost effectively. However, central infrastructure requires investment in software and hardware that otherwise would not need to be purchased, although the effect of such central invetsment may be to avoid or replace a series of investments, by each participant in a bilateral system to provide similar functionality.. Examples of these systems are Vocalink

[2] Lowe, P. (2006) The Evolution and Regulation of the Payment System p.9

[3] Reserve Bank of Australia, (September 2006) Payment Systems Development and Architecture: Some Background p.10

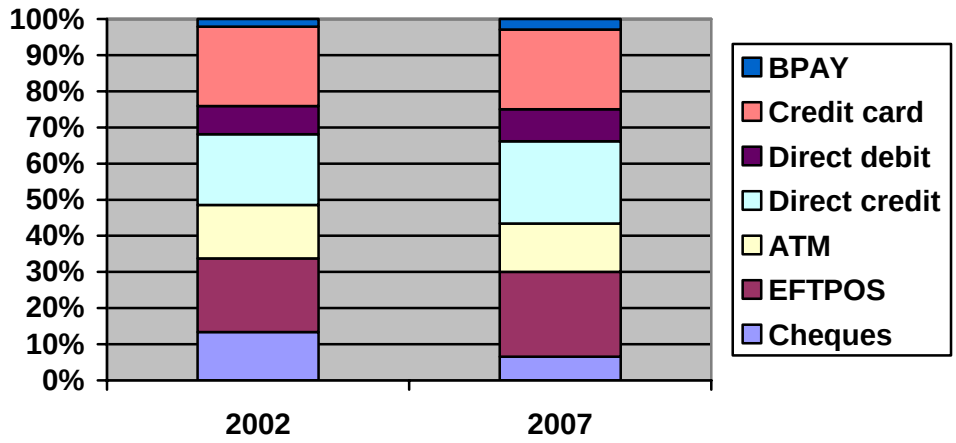
in the UK, Interpay in the Netherlands and international credit card schemes.

2.3 The payment system in Australia

In the current set of arrangements in Australia, most payments must pass through the processing and checking networks of payer bank and the recipient bank, involving time and cost at each stage of the process. At present payments are cleared an credited to the beneficiary on the working day following submission to the system.

Australia's heavy reliance on bilateral systems is unusual by international standards; central infrastructure systems are far more common.[4] Figure 1 illustrates that the majority of payments in Australia are currently made using bilateral networks. Of the payment categories identified below, only credit cards and BPAY use central infrastructure. This represents just 25 per cent of all non-cash payments in Australia. BPAY, an electronic bill payment system, which is still relatively nascent – with 185 million payments in 2007 [5]- has been a major innovation with fast payments using central infrastructure. Its usage has grown by more than 100 per cent between 2002 and 2007.

Figure 1 Payment systems in Australia, share of non-cash transactions



Source: Reserve Bank of Australia

[4] Reserve Bank of Australia, (September 2006) Payment Systems Development and Architecture: Some Background

[5] BPAY website http://www.bpay.com.au/

2.4 Real time payment systems

Real time payments in Australia would operate through a central infrastructure system, such as that operated by VocaLink. This innovation has the potential to improve the efficiency of the payment system by allowing the near instantaneous delivery of payments. Payments between agents would be initiated and completed in moments by mobile phone and over the internet. Both of the latter ways of conducting payments have grown prodigiously over the last few years. For example, in Australia internet initiated fund transfers grew by more than 500 per cent over the four year period from 2002 to 2006.[6]

At present clear on a "next day" basis. More importantly such transactions are "asynchronous" requiring effort to track the payment and when it arrives identify the transaction to which it relates. Real-time paymenst as developed by VocaLink are synchronous between payer and beneficiary – validation is the product of the payer's bank authorising the payer, the central infrastructure incrementing the settlement obligation of the banks concerned and the beneficiary bank confirming the posting to the beneficiary account. All this is confirmed to the payer within a few seconds. The payment is either irrevocably made or rejected.

Such a process allows all parties to take action based on the result of the transaction. For example, real time will allow for the immediate release of goods in a transaction since the infrastructure will allow payments to be verified and transferred within the same day. One of the major ways real time payments will deliver productivity improvements is by cutting out the costs incurred by banks from failed payment transactions, that are detected after the payment has been received from the customer by either the paying or worse still beneficiary bank.

This study aims to identify and model the productivity benefits that are likely to result from switching to a real time central infrastructure for direct debit and direct credit payments.

[6] Lowe, Philip 2006 The Evolution and Regulation of the Payments System, Reserve Bank of Australia

3 METHODOLOGY

3.1 Modelling payment systems

The backbone of the economy

The market for payments is fundamentally important to the economy. Virtually every transaction in the economy requires an appropriate, effective payment infrastructure. Thus, payment systems make a crucial contribution to economic performance. In this chapter we outline how this contribution can be modelled.

3.1.1 Risk cost frontier

The trade off in payment systems

Economic transactions involve transfers of money between buyers and sellers. Like any use of resource, the conduct of a payment is not costless. Costs include the resources used to process, track and correct the transaction; time spent processing the payment, the hardware and computer system needed to support payment infrastructure, the back-office labour and software needed to support the processes.

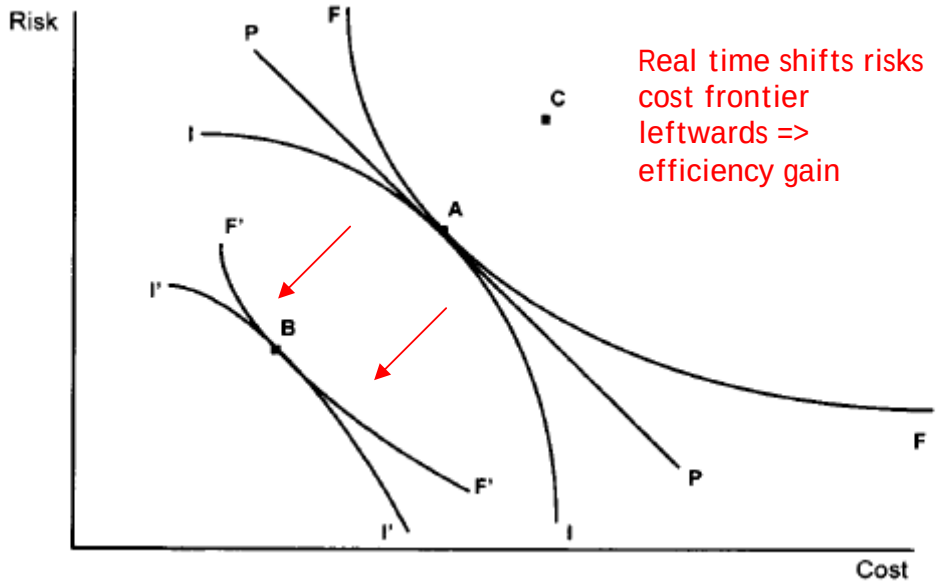
Upon agents agreeing to a transfer of money, they necessarily expose themselves to risk. Risk comes about because payments involve explicit or implicit extensions of credit – the lag between a transaction occurring and the settlement being resolved so that the beneficiary receives their money. For transactions involving the transfer of goods, upon the transaction taking place, the payee is necessarily receiving the payment in good faith that the payer is credit worthy.

Payments therefore involve the resource costs of operating the systems and risks to the agents involved in the transactions. In practice, there is a trade off between risk and cost. As more is invested in a more complex payment system that reduces risk, the cost of the system rises. However, as more is invested in the system, the additional reduction in risk falls. This is an illustration of the usual assumption used in economics of diminishing marginal returns.

Similarly, the most expensive payment system is unlikely to be able to eliminate every risk that exists. However, as the cost of the system is reduced, risks are likely to rise substantially, for example, as systemic failures through incomplete credit checks emerged.

We can model the ideas behind the risk cost trade-off with the simple diagram in figure 2:

Figure 2: The risk cost frontier[7]



The curve FF on the diagram represents the trade off between risks and costs. This is the best-practice efficient frontier, where costs cannot be reduced further without increasing risks and risks cannot be reduced further without increasing cost, given certain existing conditions.[8] The set of best practices in the payment system depend on the technology available for processing payments, the financial techniques for observing and mitigating risk and the regulatory environment.

Innovations and changes in technology are capable of shifting the risk cost frontier. For example, an improvement in hardware that allows greater processing power to evaluate risk more quickly or an innovation in software that had a more comprehensive set of algorithms for identifying risk could allow risk to be reduced substantially without at the same or lower cost. The idea here is that the 'bads' of risk and costs are reduced, allowing the same amount of payment system provision, in the same way that technological progress in the wider economy allows the same output to be produced with fewer inputs.

Technological innovation therefore has the potential to shift the risk cost frontier leftwards in Figure 1 from FF to F'F'. Real-time payment systems are an innovation that can reduce the costs of transactions through the reduction in the number of failed payments and reduce the risks through more robust systems for identifying fraudulent payments.

[7] Berger, A. Hancock, D. and Marquardt, J. (1996) A Framework for Analyzing Efficiency, Risks, Costs and Innovations in the Payment System, Journal of Money, Credit and Banking 28:4 p. 696

[8] The theoretical framework set out is wholly derived from Berger et al (1996)

3.2 Estimating the impact of a real time payment system

3.2.1 Productivity improvements

We model the shift in the risk cost frontier resulting from the real time payments innovation by disaggregating the productivity improvements into five facets, set out below. Each of the productivity impacts are then fed into the Australian Treasury model of the economy to give an estimation of the potential impact on long run economic growth and key macroeconomic variables.

1. Cost of managing payments

Real time payments are capable of reducing costs through a reduction in the activities involved in making payments. Customers will be able to serve themselves by initiating and validating payments, removing the need for processing and payment reconciliation systems that require expensive resources. For example, rather than having to pass through the processing networks of two banks in a bilateral system, the real time system links payers directly with payees and immediately processes the payment message. We analyse how real time payments offer a reduction in the unit costs of transfer payments compared with the current bilateral arrangements.

2. Shift in transactions

The introduction of real time payments will result in the reallocation of more expensive payments such as cheques to real time payment systems. In economics this is known as the substitution effect – consumers substitute cheque payment for the more convenient alternative. We look at how the forecast shifts in volume of payments and the cost associated with each payment type results in an overall cost reduction through a redistribution of payments to more efficient means.

3. Reduced failed transactions

The central infrastructure technology behind real time payments is capable of reducing the number of failed transactions – where payments fail to be completed, for example, due to errors in payment detail inputs - and the associated costs for financial institutions. Under current arrangements a transfer must first pass to the payer's bank and the details of the payment processed – undergoing a primary transaction cost. Following this, the details of the payment must then be passed onto the recipient's bank and processed – this again, results in a transaction cost. However, an error in the payment cannot always be addressed at the payer's end. Consequently, in the current system mistakes may be quite costly as the payment may already have been processed by one of the banks – and there are costly consequences of reconciling the mistaken payment.

By contrast, real-time payments involve the payment details being passed straight from the payer's bank through the central infrastructure and into the recipient's bank. The real-time system faciltates the end to end validation and acceptance of the payments.. If there is a mistake the payment bounces back immediately. Real time payments therefore have the potential to reduce payment failures (within the banking system) to zero.

4. Reduced fraud

Real payments have the potential to reduce fraud by having robust processes that identify anomalous payments within the same day – rather than the potential lag before fraud is uncovered in the current system. The service would be based on a robust customer authentication system. The increased security from real time payment systems can be thought of as having an impact similar to the reduction in fraud that resulted from the introduction of chip and pin.

We model this by looking at the cost savings achieved through the introduction of chip and pin. Secondly, we study the reduction in fraud costs due to the shift to real time from other payment methods more susceptible to fraud, such as cheques.

5. Increased efficiency for users

In this section we consider the benefits for consumers and small and medium sized enterprises (SMEs). The reduction in time spent waiting for payments to clear will result in an improvement for customers that would otherwise have to wait for the money to transfer. The benefits accrued can be considered in standard economics as being represented by consumers' marginal willingness to pay.

A recent Office of Fair Trading report in the United Kingdom aimed to estimate the consumer and SME benefits of faster payments through market research that identified what users of the system were willing to pay for faster payment service propositions.[9] Based on this data, the study was able to estimate demand curves for faster payment services and consequently, the total benefit for users of the system. This methodology can be applied to the Australian market. Whilst extensive market research as carried out for the OFT is beyond the remit of the current study, the findings for the UK market can be applied to Australian by scaling for the relative size of each payment system market and the relative speed of payment in each market Further to this, we also scale the benefits down to take account of the lower payment clearing time that exists in Australia (two working days rather than three) compared with the UK.

The estimated benefits for consumers are partly a transfer of welfare from banks to consumers. However, it can also be considered as a

[9] BPSL Innovation Working Group report, May 2005, prepared for the Payment Systems Task Force by the Office of Fair Trading,

productivity improvement due to the increased range of opportunities for consumption that the near instantaneous delivery of payments opens up. However, for SMEs faster payments offer real productivity improvements due to the reduced time in business to business transactions – providing a boost to potential economic activity. Given this, we discount the estimated consumer benefits to take into account the element which is not a productivity boost but merely a wealth transfer but do not discount the SME benefit.

4 MICRO ANALYSIS AND RESULTS

This chapter shows three scenarios for the Australian payment system: a base case where real time payments are not introduced, scenario one where real time is introduced and achieves strong uptake and scenario two, where more cautious estimates of real time's impact are considered and, given some of the ambiguities surrounding the area, the impact on fraud is assumed negligible. Building on these scenarios, we look at how the introduction of the real time payment system affects productivity and the cost savings generated for the economy.

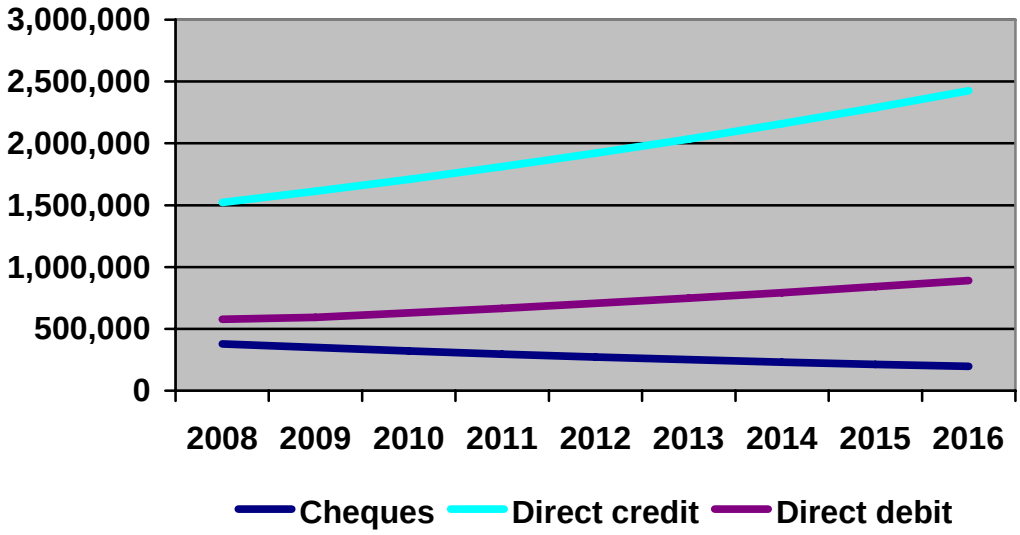
We forecast future transactions on the basis of recent trends. The underlying assumptions are of GDP growth at 3.5 per cent – the trend over the last five years, and inflation levelling out to the median value of the Reserve Bank of Australia's 2-3 per cent target range.

4.1 Payment system scenarios

4.1.1 The base case: payments remain bilateral

In the base case scenario in figure 3, cheque usage declines gradually, continuing its current trend. Direct debits and, especially, direct credits continue to grow. Real time is not introduced.

Figure 3 Base case scenario, annual number of transactions, thousands

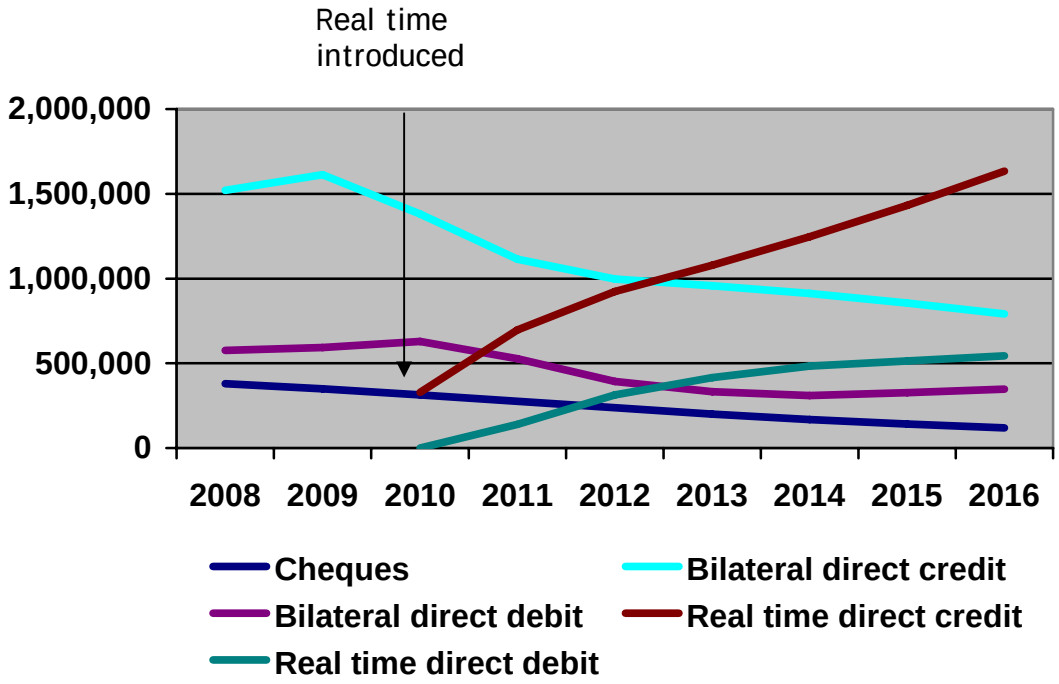


Source: cebr calculations based on Reserve Bank of Australia trends and Vocalink data

4.1.2 Real time scenario one

In scenario one, shown in figure 4, cheque usage declines more rapidly as real time emerges as an attractive payment proposition for consumers following its introduction in 2010. Real time payments increase their share of the credit transfer market so that the share of bilateral payments declines over time.

Figure 4 Real time scenario 1, annual number of transactions, thousands

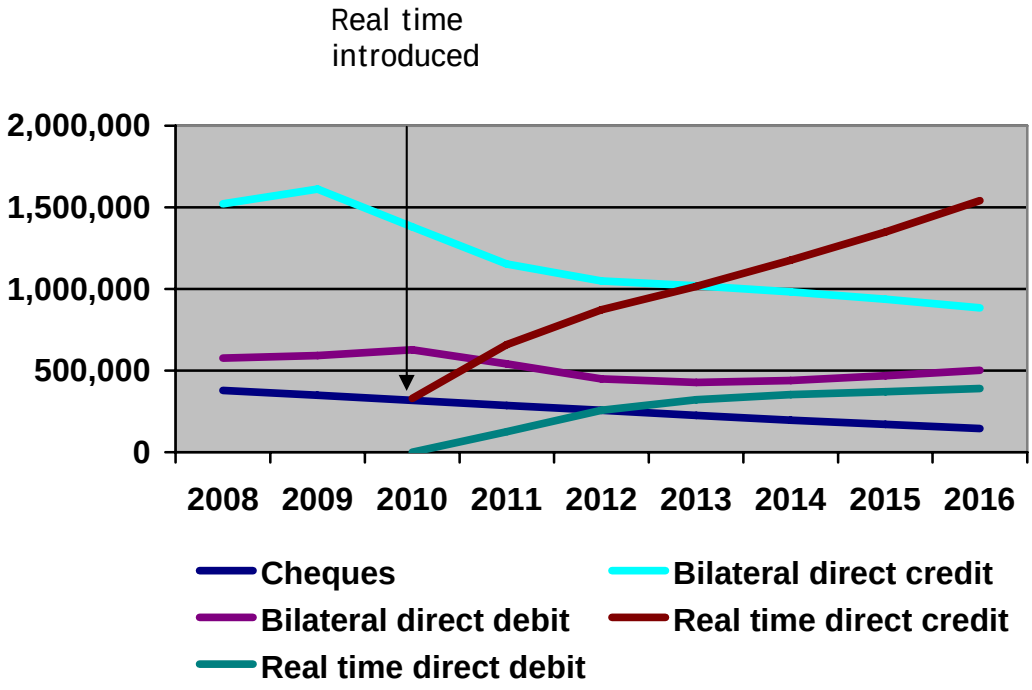


Source: cebr calculations based on Reserve Bank of Australia trends and Vocalink data

4.1.3 Real time scenario two

In scenario two the impact of introducing real time is assumed to be more gradual. Cheque usage declines more conservatively following real time's introduction in 2010. The increase in real time payments' share of the credit transfer market is also weaker in this scenario.

Figure 5 Real time scenario 2, annual number of transactions, thousands



4.2 Productivity improvements

4.2.1 Cost of managing payments

Real time payments result in reduced cost of handling payments as the process is carried out by customers and the costs of processing payments are vastly reduced. Notably, in Australia, BPAY already operates under this 'self-service' model, achieving considerable core cost reductions. Table 4-1 shows the relative costs for financial institutions of different payment types based on a recent Reserve Bank of Australia study. Real time payments will offer a significant reduction in unit costs relative to bilaterally conducted direct credit and direct debit payments. The reduction in payment processing tasks will reduce overall unit costs to $0.035. This is a significant reduction from the current $0.08 and $0.10 costs for direct credits and direct debits respectively.

Table 4-1 Total cost of payments for financial institutions in 2007, weighted average, Aus $

	2007
Cheques	4.22
EFTPOS	0.22
ATM	0.86
Direct credit	0.08
Direct debit	0.10
BPAY	0.51
Credit card	2.38

Source: Reserve Bank of Australia, 2007, *Payment Costs in Australia*

As real time payments increase their share of total payments, substituting for bilateral direct credit and direct debit payments, substantial cost savings are achieved. Table 4-2 illustrates the cost savings available from reduced cost of managing payments. In scenario one, cost savings rise to $125 million per year by 2015 and $198 million by 2020. In scenario two, where real time penetrates the market less quickly, cost savings are $108 million in 2015 and reach $171 million a year in 2020.

Table 4-2 Total annual cost of managing direct debit and credit payments for financial institutions, 2010-2020, Aus $m

		2010	2015	2020
Base case	Direct credit	$148	$225	$340
	Direct debit	$68	$103	$156
Real time scenario 1	Direct credit	$132	$142	$206
	Direct debit	$68	$61	$92
Real time scenario 2	Direct credit	$132	$147	$213
	Direct debit	$68	$73	$112
Total cost saving from real time	**Scenario 1**	**$16.8**	**$124.7**	**$198.3**
	Scenario 2	**$16.8**	**$108.3**	**$171.0**

Source: Reserve Bank of Australia and cebr calculations

4.2.2 Shift in transactions

The Reserve Bank of Australia paper revealed that cheques are by far the most costly payment type, as shown in Table 4-1 above. Financial institution costs for processing cheques are $4.22; more than 42 times the cost of processing a direct debit payment (under the current bilateral arrangements).

As the real time payment share increases and cheque payments are substituted for real time payments, more cost savings will be available due to the lower unit cost of real time. Furthermore, the convenience and appeal of the real time payment system is likely to accelerate the decline of the cheque. We have assumed an increase in the rate at which cheque use is declining, from an eight per cent a year fall in cheque use in 2007 to a sixteen per cent a year fall in cheque use in 2013 as real time impacts the payments market in scenario one. Scenario two there is a more gradual decline in the cheque. From this we were able to derive cost savings as follows:

Table 4-3 Total annual costs and savings due to shift in transactions, 2010-2020, Aus $m

	2010	2015	2020
Base case	$1,471.8	$1,102.4	$825.6
Scenario 1	$1,439.6	$730.6	$345.7
Scenario 2	$1,458.5	$879.	$410.6
Scenario 1 cost saving	**$32.3**	**$371.8**	**$479.9**
Scenario 2 cost saving	**$13.4**	**$223.1**	**$414.9**

Source: Reserve Bank of Australia and cebr calculations

Looking at the above table 4-3, with real time payments precipitating the decline in cheque use, real time payments clearly offer considerable cost savings. In scenario 1 the savings rise to $372 million a year in 2015, reaching $480 million in 2020. In scenario 2 the cost savings are lower but still substantial; by 2015 cost savings are $223.1 million a year, rising to $415 a year by 2020.

4.2.3 Failed transactions

One of the key impacts of the real time central infrastructure will be a reduction in failed transactions. These are highly costly for financial institutions. A recent report estimates that the cost of investigating failed payments is as much as $97 per item.[10] Essentially, there are three stages for payments:

[10] Sungard, 2004, Payment Exceptions and Investigations

- Payer's request processed by payer's bank
- Payment passed through central infrastructure or bilateral network
- Payment processed by beneficiary bank

If a payment is rejected at any stage of the process a cost is accrued. The further down the payment value chain the rejection occurs, the greater the cost of that failed payment. A failed payment at the final stage of the payment process is most costly – as a rule of thumb 100 times the original cost of the payment.

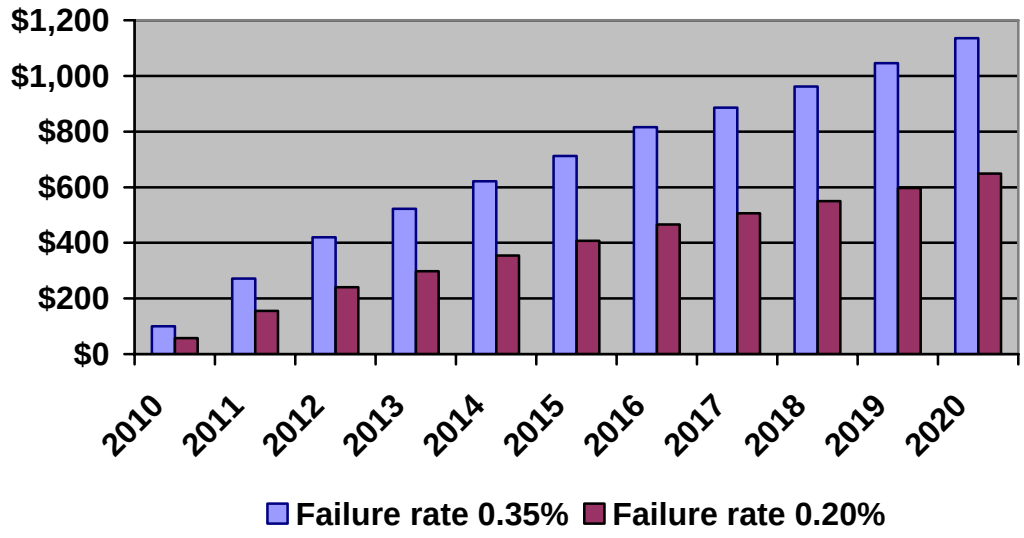
Due to the uncertainty surrounding the bilateral system failure rate, in our modelling we study different scenarios. The first scenario has failure rates slightly higher than central infrastructure systems, at 0.2 per cent. The second scenario has failure rate of 0.35 – where the bilateral system is considerably more subject to payment failures than a multilateral system.

A central infrastructure ensures that many payments with errors are detected. The rate of payments failing at the final stage with a central infrastructure can be as low as 0.11 per cent to 0.13 per cent. [11]

Due to the near instantaneous and self service nature of real time payments, failure rates at the final stage of the process are reduced to zero. This is where real time payments offer considerable benefits. We now consider how real time can reduce costs in the two failure rate scenarios and in the context of the real time scenarios 1 and 2.

All cost savings, for the respective scenarios, are calculated relative to the base case where real time is not introduced and the bilateral system would remain.

Figure 6 Annual cost savings from reduced failed transactions for real time scenario 1, 2010-20, Aus $m



[11] Figures based on Vocalink BACS payment processing data, 2007

Source: cebr calculations

Under scenario 1 and with a low failure rate, real time central infrastructure can reduce the costs of failed payments for financial institutions by $57 million in the first year of its introduction, as shown in figure 6 above. However, the savings will rise significantly as the share of real time payments increases, reaching more than $407 million a year by 2015 and $649 million in 2020. A high failure rate under this scenario results in considerably higher annual cost savings. Savings rise to $712 million in 2015 and $1.136 billion in 2020. These savings of are shown in table 4-4 below:

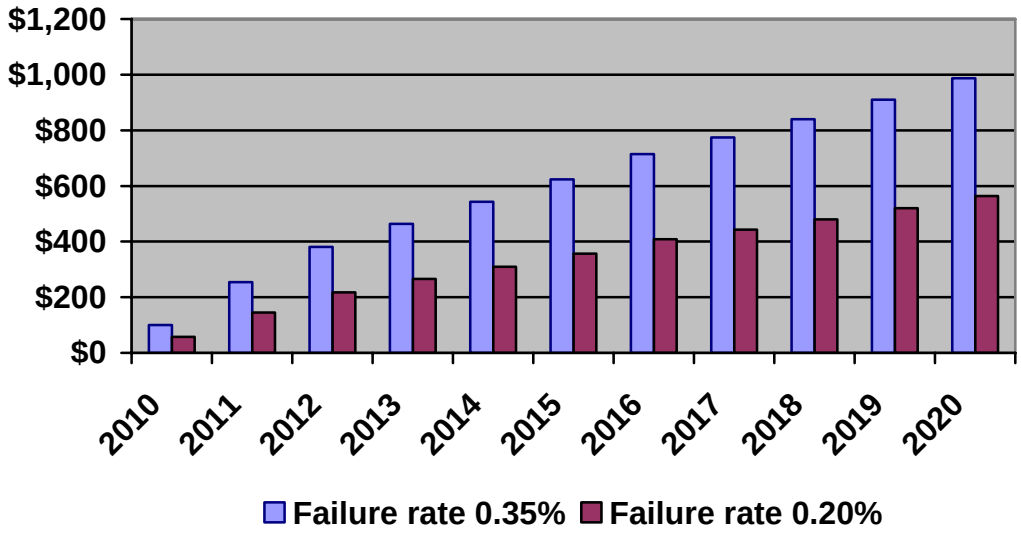
Table 4-4 Total annual cost savings for financial institutions in 2010-20 with real time introduced in 2010, Aus $m

Real time scenario	Payment failure rate	2010	2015	2020
RT scenario 1	0.20%	$57	$407	$649
RT scenario 1	0.35%	$100	$712	$1136
RT scenario 2	0.20%	$57	$356	$564
RT scenario 2	0.35%	$100	$624	$987

Source: cebr calculations

Under scenario 2 with a low failure rate, shown in figure 7, savings reach $356 million in 2015 and $564 million by 2020. With a higher failure rate assumed, again the cost savings are more substantial. Savings rise to $624 million a year in 2015 and $987 million by 2020.

Figure 7 Annual cost savings from reduced failed transactions for real time scenario 2, 2010-20, Aus $m



Source: cebr calculations

4.2.4 Reduction in fraud

Cheque use is associated with a very large quantity of fraud. In the year to June 2006, the value of fraud transactions in Australia was $41 million. While some caution is necessary over the effect of real time on fraud,[12] the introduction of real time and its concomitant effect in reducing cheque use can offer savings in the value of fraud transactions.

The savings are considerably more modest than those arising from the other cost savings considered so far, with savings reaching $3 million by 2015 and $5 million by 2020 under scenario one, as shown in Table 4-6. Under scenario two, fraud savings are negligible.

Table 4-6 Total annual cost savings from the reduction in fraud for 2010-20 with real time introduced in 2010, Aus $m

Real time	2010	2015	2020
Annual total cost savings	$0.0	$3.1	$5.0

Source: APCA and cebr calculations

4.2.5 User efficiency

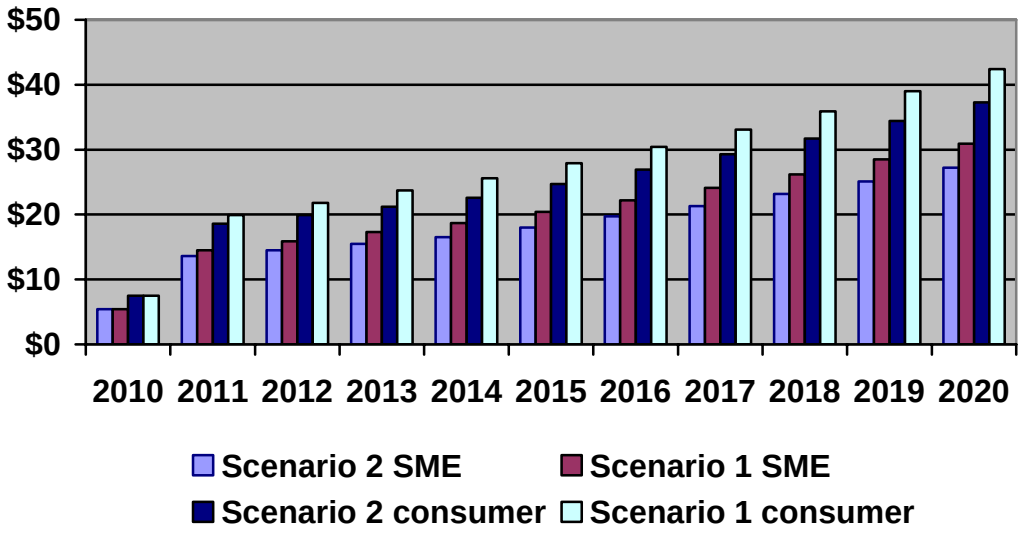
Here we model how the introduction of real time will benefit consumers and Small and Medium Sized Enterprises. Consumers benefit through the reduction in clearing time and increased flexibility and control over their payments. These benefits increase over time as the real time payment

[12] See BPSL Innovation Working Group report, May 2005, 'Cost-Benefit Evaluation' page 302

system is increasingly taken up by the Australian market. Consumer benefits rise from $7.5m in the first year of real time in 2010 to $27.9m by 2015 under scenario 1. SMEs benefit from the fall in time taken over business to business transactions, with benefits rising from $5.4m in 2010 to $20.4m by 2015.

Under scenario 2, consumer benefits rise to $24.7m a year by 2015, while SNME benefits reach £18.0m a year by this point. The two scenarios for user efficiency savings are shown in figure 8 below.

Figure 8 Annual user efficiency benefits, 2010-2020, Aus $ millions



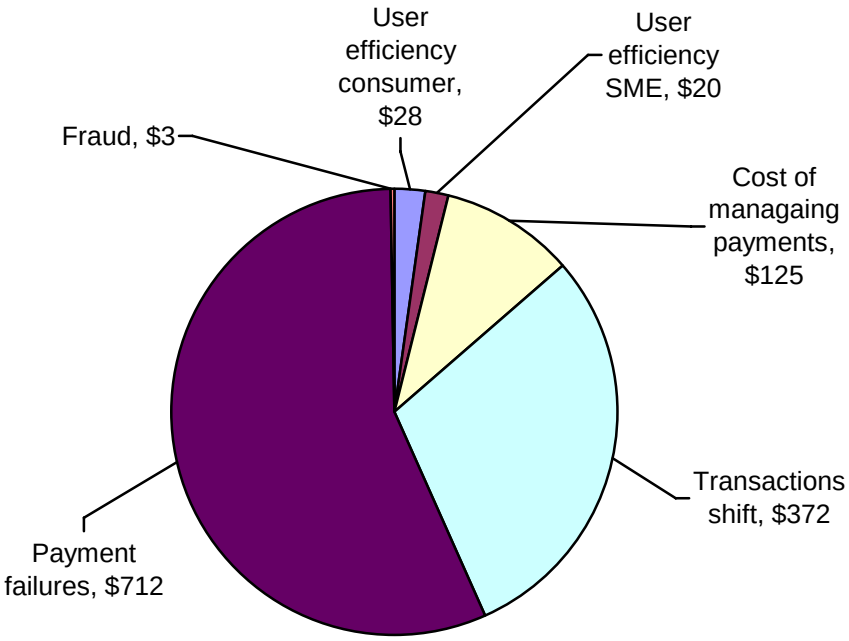
Source: OFT BPSL Working Group report cebr calculations

4.2.6 Summary cost savings and benefits

The summaries below show that failed payments are by far the largest cost saving from real time payments. The next largest is the cost savings due to transactions shifting to more efficient real time payments followed by the savings from the reduced cost of managing payments. User efficiency savings and reduced fraud are the final two savings, in order of size.

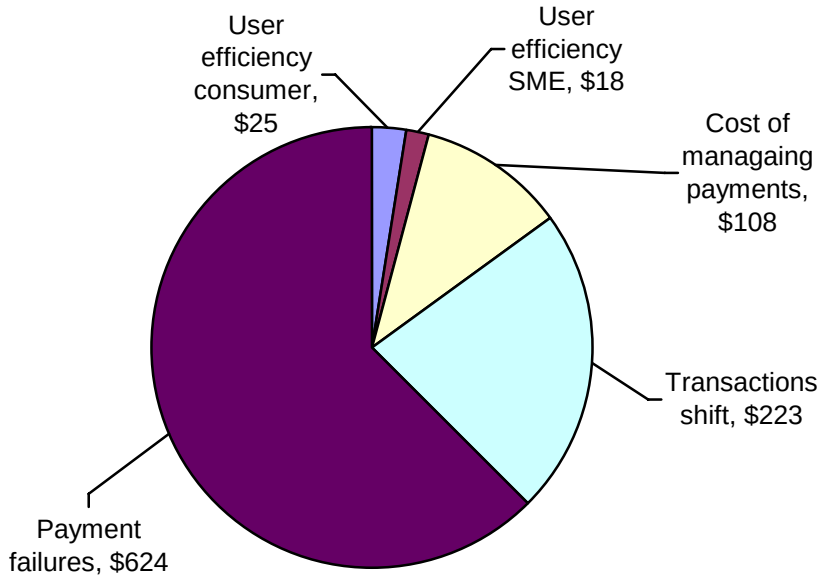
In 2015, in real time scenario 1, with a high payment failure rate, more than $1.2 billion cost savings will be achieved in the year. These are split as in figure 9:

Figure 9 Total cost savings from real time payments in 2015, Aus $ millions



In 2015, in real time scenario 2, with a high payment failure rate assumed, $964 million cost savings will be achieved in the year. These are split as shown in figure 10

Figure 10 Total cost savings from real time payments in 2015, Aus $ millions



5 MACRO ANAYSIS AND RESULTS

Introduction

The micro results displayed large costs savings from the introduction of real time payments. In this section we aim to describe how the results of the micro analysis would translate into macroeconomic impacts.

The macro model

Cebr have translated the Australian Treasury economic model TRYM into a multiplier based model to translate the micro cost savings into potential macro effects.

The TRYM model has been described as 'as broadly new Keynesian in its dynamic structure but with an equilibrating long run. Activity is demand determined in the short run but supply determined in the long run (see Section 2.3). The model will eventually return to a supply determined equilibrium growth path in the absence of demand or other shocks'[13].

The multipliers to translate cost savings into macro effects were developed from a simulation on the TRYM model to calculate the effects of a boost to productivity on GDP and other economic variables.

The simulation is described in a paper presented to the fifth Australian Economic Modelling Conference by Australian Treasury modellers[14] While this simulation was carried out more than 15 years ago when the Australian economy was less open than it is now, the fact that the simulation properties of the TRYM model have remained essentially similar is confirmed by an analysis of more recent simulations using the model[15].

cebr approach

We have used the multipliers derived from the higher productivity TRYM simulation. Figure 11 on the next page shows how increases in productivity impact on the real Australian economy in the TRYM model in the long term.

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13 '*The Macroeconomics of the TRYM Model of the Australian Economy'* Modelling Section, Macroeconomic Analysis Branch, Commonwealth Treasury, December 1996

14 An Analysis of the Macroeconomic Effects of Higher Productivity Using the TRYM Model by Andrew Johnson and Craig Louis. Paper presented to the Fifth Australian Economic Modelling Conference EMBA/EPAC Model Comparison Conference Canberra April 1994

15 For ecample, the simulations reported in '*The Macroeconomics of the TRYM Model of the Australian Economy'* Modelling Section, Macroeconomic Analysis Branch, Commonwealth Treasury, December 1996, which remains the key document of record as part of the model users manual, or more recently 'Treasure model simulations of a terms of trade shock' which is presented as Annex A to OECD ECO/WKP (2006) 47

Figure 11 Long run effects of higher productivity in the TRYM model of the Australian economy[16]

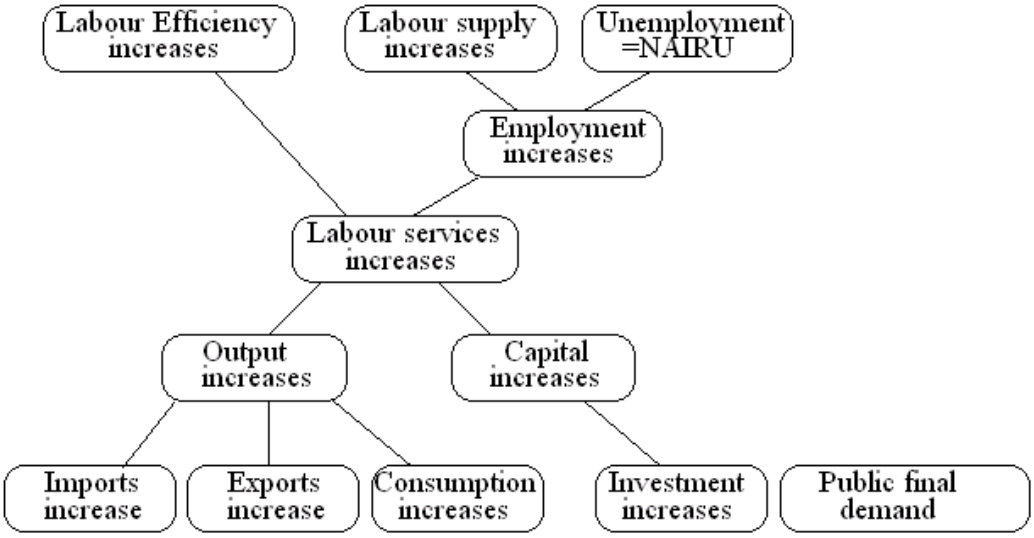
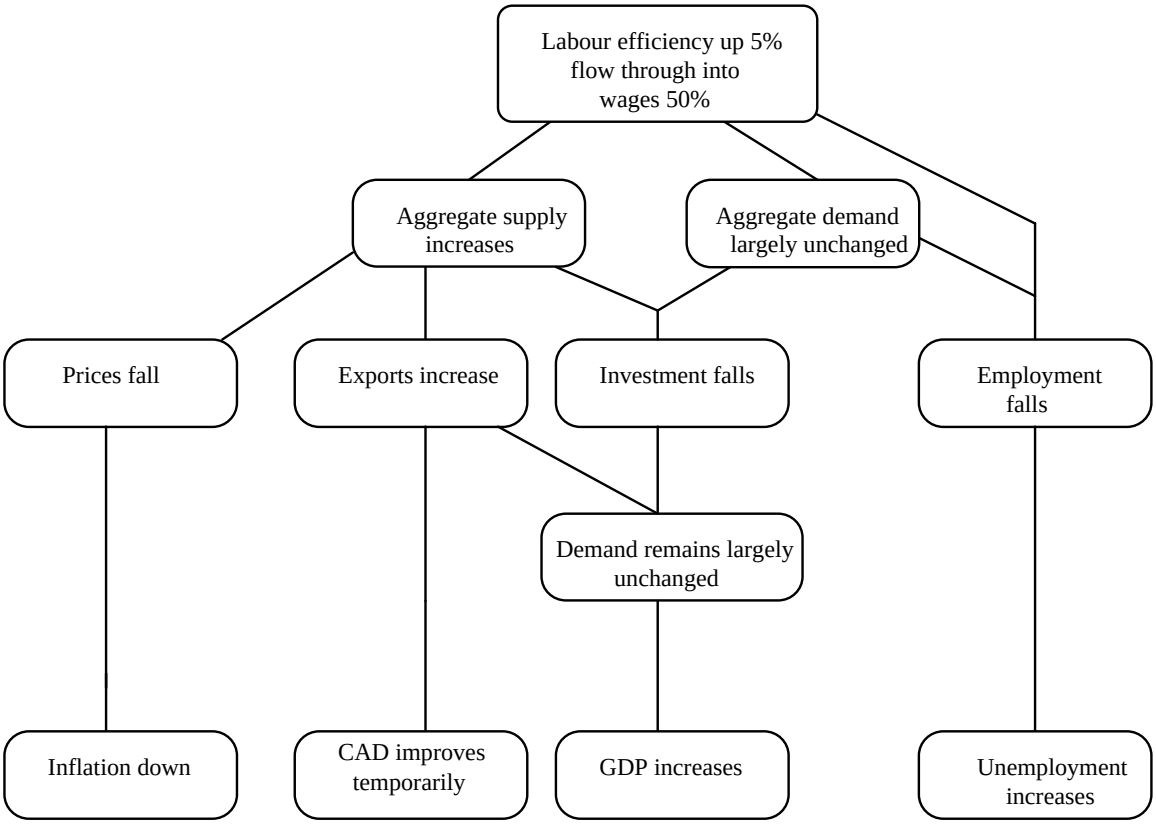


Figure 12 Short term effects of a 5% boost to labour efficiency on the TRYM model of the Australian economy[17]



Higher productivity leads to a virtuous circle, where the boost to productivity leads to higher real wages which boosts the labour supply which in turn leads to higher GDP.

16 Source: Figure 1, John son and Louis op cit
17 Source: Figure 2, Johnson and Louis, op cit

However, as Figure 12 on the previous page shows, some of the short term benefits are muted and the adjustment takes some time to occur. Initially investment may fall, while employment also is likely initially to fall and unemployment increase as the impacts of higher productivity work their way into the economy.

The cost savings are translated into productivity improvements using the following assumptions:

i) All cost savings to businesses – to the financial sector; to corporates and to SMEs are assumed to be reflected 100% in higher productivity;

ii) All cost savings to households are assumed to be reflected in higher productivity but at a discounted rate. This is analogous to the treatment of commuter time savings in traditional transport modelling, where the benefits are discounted to reflect the fact that there is only partial flow through to the business sector. The discount factor chosen here is 75%, which is equivalent to the factor that is traditionally used to discount commuter time savings.

The low estimates of the productivity effects are taken from cost saving scenario 2, low fail rate scenario, with the calculations that do not take account of user efficiency.

The high estimates of the productivity effects are taken from cost saving scenario 1, high fail rate scenario, with the calculations that include the effects of user efficiency.

Results

Not surprisingly the results are positive – there are few macroeconomic models that do not give positive results at least in the long term from supply side developments that boost productivity.

In the long term the simulation of the benefits implies a long run boost to the Australian economy of between 0.06% and 0.18% of GDP.

Table 5-1 below sets out the key results of the simulation.

Table 5-1 Impact of real time productivity boost on Australian macroeconomic variables, long-run percentage change

Component	Low estimate	High estimate
Consumption	0.059	0.170
Business Investment	0.057	0.163
Dwelling Investment	0.066	0.188
Public Demand	0.059	0.170
Gross National Expenditure	0.059	0.170
Exports	0.065	0.185
Imports	0.047	0.135
Gross Domestic Product	0.063	0.179
Employment	0.009	0.025
Labour Supply	0.009	0.025
Unemployment	0.000	0.000
Productivity (L)	0.055	0.157
Nominal Wages	-0.009	-0.025
Cons. Deflator	-0.062	-0.176
GDP Deflator	-0.062	-0.176
Terms of Trade	-0.012	-0.035
90 day bill rate	0.000	0.000
10 year bond	0.000	0.000
Exchange Rate	0.039	0.110

The simulation also indicates that the benefits of the reduced costs and increased productivity are likely to show themselves in lower inflation and higher employment, consumption and business investment.

6 CONCLUSIONS

This report has shown that real time payments can deliver significant productivity improvements for the Australian economy. The key improvements are in the following – ranges are given for the different scenarios:

- The reduced cost of managing payments yields average annual cost savings of between $185m and $216m depending on the uptake of real time in the period 2010 to 2030

- The shift in transactions to the more efficient payment systems precipitated by real time infrastructure yields average annual cost savings between $315 million and $377 million over the period 2010 to 2030

- The reduction in payment failures yields significant costs savings. The scope of these is contingent on the assumptions made about failure rates in the existing payment system. A lower bound of cost savings from reduced failed transactions in 2015 is $356 million with a higher bound $712 million, rising to between $520 million and £1.136 billion in 2020, ten years after real time's introduction

- Savings from the reduction in fraud are more modest, averaging $3.5 million a year

- The gains for users (consumers and SMEs) from the increased convenience and time saved due to real time payments are equivalent to $114 million a year and $130 million a year over the period 2010 to 2030

- The net impact is a productivity boost that measures between a lower bound of 0.06 per cent and a higher bound of 0.12 per cent of Australian GDP in 2020

- This boost to the productive capacity of the economy, through the multiplier effect, results in a long run expansion of the Australian economy of between 0.06% and 0.18% of GDP, according to the different scenarios

7 APPENDIX

Explaining the TRYM Model

Supply Side and External Shocks

In contrast to demand side shocks, supply side shocks are usually characterised by prices and output moving in opposite directions. This can be seen by shifting the long run aggregate supply curve to the right in Figure 5. This outcome is also true of external shocks such as an increase in world output or the terms of trade. The exchange rate rises in response to increasing export prices and output, lowering import prices and acting to insulate the domestic economy from the price effects of the initial shock.

In the case of both supply side and external shocks, the insulation of the economy from some of the price effects of the shock may reduce the requirement for discretionary monetary[18] and fiscal policy responses to supply side or external shocks. The TRYM User's Guide (with TSP) contains examples (including TRYM simulation files to allow replication of the simulations) of both domestic supply side and external shocks and refers to relevant papers. Of these, the NAIRU shock is briefly described below. It provides a good example of how full model analysis can differ from partial analysis.

NAIRU Shock

A one per cent reduction in the NAIRU[19] (or the equilibrium rate of unemployment) leads to a roughly proportional increase in labour supply in equilibrium (around 0.8 per cent). The availability of more employment encourages previously discouraged workers to enter the labour market, increasing equilibrium labour supply. As a result, employment rises by 2.0 per cent in the long run. The higher level of employment is associated with a similarly higher level of output.[20] While the long term effects are driven by the supply side, the short term effects are driven by the demand response to the reduction in inflationary pressures. Figures 8A and 8B, show that the initial effect is to lower the inflation rate (for any given level of unemployment). This

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18 The monetary policy default in the model is non-accommodating (that is, the growth in the nominal money supply is fixed).

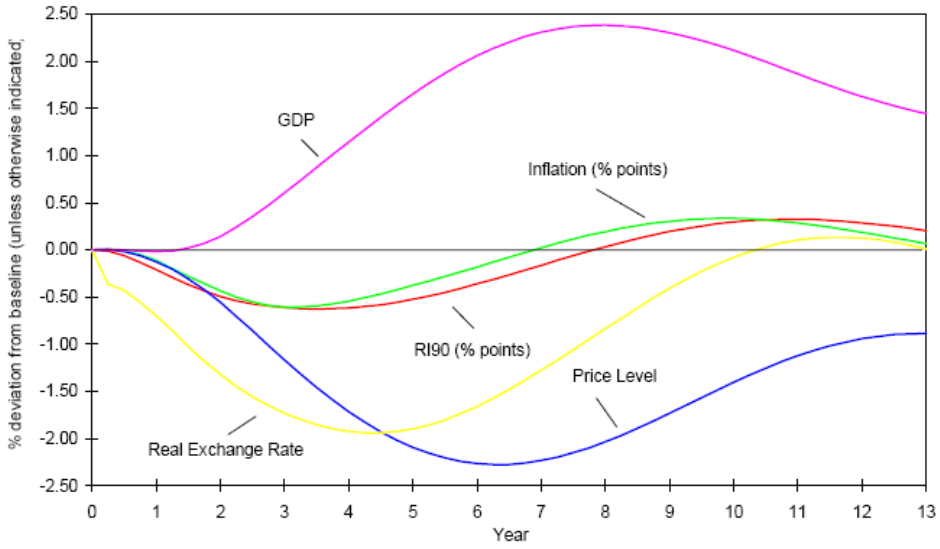
19 In TRYM, the combination of an unemployment variable adjusted for search effectiveness (RNUSTAR) and two wage setting parameters (WS and WSo) determine the level of the NAIRU. Therefore, it is possible to examine the macroeconomic implications of changes in search effectiveness of the unemployed and wage setting factors separately. In this simulation, the one per cent reduction in the NAIRU is achieved by lowering the wage setting parameter, WS.

20 The equilibrium price level depends on the monetary policy assumption. In this simulation, monetary policy is assumed to be non-accommodating of the increase in real activity (see Section 3.2.3). Hence, the long run price level is lower. A monetary policy setting that accommodated the increase in real activity would lead to an unchanged price level. Inflation would then be the same on average over the period. The initial deflation would be offset by a future inflation.

leads to lower interest rates and a lower exchange rate. It is this interest rate and exchange rate response which initially stimulates investment (and, therefore, GNE) and output growth.[21] In response to the initial fall in real wages, employers also substitute labour for capital for a given level of output. However, this is a relatively small effect compared to the interest rate and exchange rate effects. Thus, the short term response of employment is much greater than would be thought from simply looking at the short term elasticity of the labour demand curve.

Understanding the intuition behind the TRYM Results

Fig 8A: Lower NAIRU

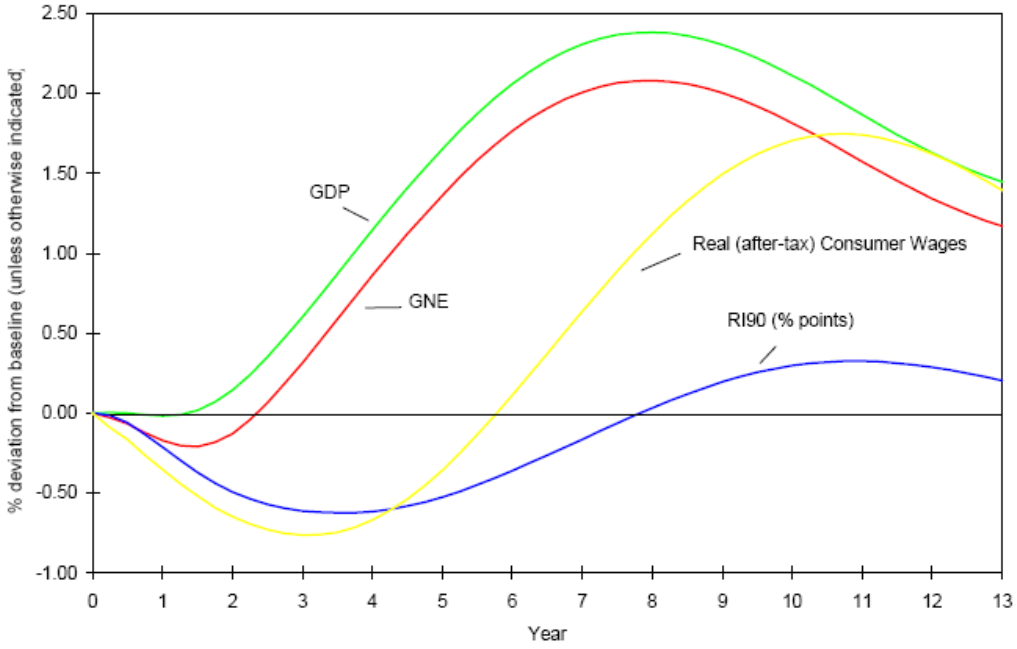


A similar, somewhat counter-intuitive result occurs in the long run. In the long run, the aggregate demand curve is relatively flat for an open economy like Australia. As a small economy, Australia can almost sell as much as it likes on the world market. Small changes in the real exchange rate would be expected to increase net exports in the long run by a significant amount. Thus, output is very elastic with respect to small changes in export prices relative to import prices (and hence output prices relative to consumer prices and changes in the consumer real wage). The elasticity of employment for the economy as a whole in the long run is again much greater than would be apparent from the labour demand equation. The aggregate employment elasticity is determined by the sensitivity of net exports to real exchange rate changes rather than the elasticity of the labour demand curve. The labour demand curve by itself would suggest that real producer wages needed to fall by 2.3 per cent to accommodate the additional employment achieved in the long run from the NAIRU shock. In comparison, the full model results

[21] As in the monetary policy shock, there is little external crowding out of the GNE stimulus and, in fact, there is a slightly positive contribution from net exports.

indicate that real producer wages are virtually unchanged in the long run. Moreover, as the tax burden occasioned by unemployment benefit transfers has been reduced, the after-tax consumer real wage actually increases in the medium to long term (see Figure 8B). In addition, as more people are in employment, living standards for the community as a whole are much higher.

Fig 8B: Lower NAIRU



They rise by more than either after-tax consumer real wages or GDP. Stacey and Downes (1995) provide a fuller discussion of the interrelationships involved.[22]

While there are a large number of caveats to the model results, the results serve to illustrate how analysis done in the context of a fully articulated model can provide a very different view from that of a partial analysis that focuses only on selected interrelationships.

[22] Stacey, G. and Downes, P.M. (1995), 'Wage Determination and the Labour Market in the Treasury

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Appendix B – Example of a real time hub infrastructure – UK Faster Payments

The diagram below is an overview of the UK Faster Payments infrastructure – an example of a real time hub infrastructure. This supplements our response to question 27.

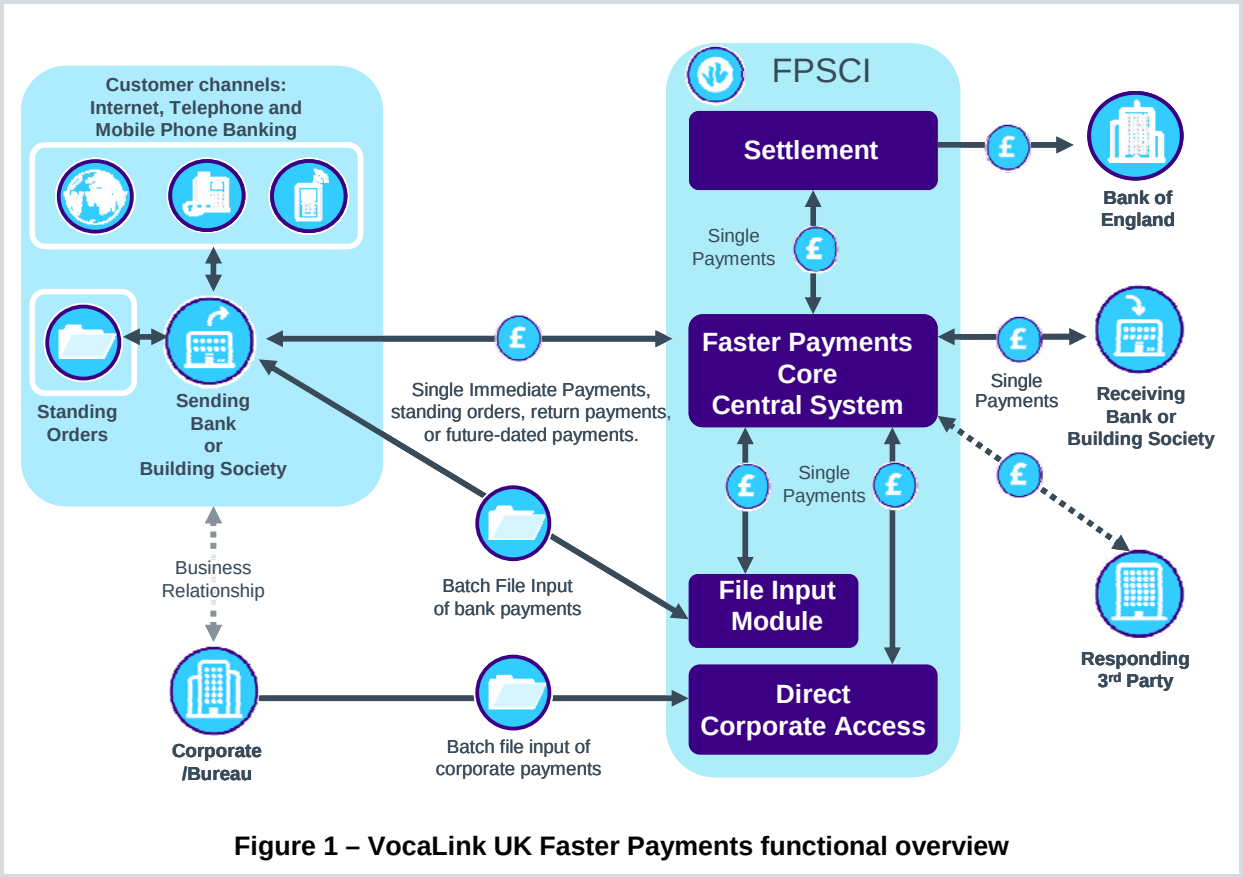


Figure 1 – VocaLink UK Faster Payments functional overview

Appendix C – Immediate Mobile Payments

The attached research supplements our responses to questions 30 and 41.

Immediate Mobile Payments

The Voice of the Customer

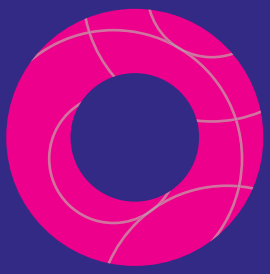
VocaLink Consulting Services

in association with

accord

VOCALINK

safer payments, smarter partner



Contents

Research objectives and methodology

Research objectives

VocaLink Immediate Mobile Payments delivers value from payer to payee within seconds and offers the additional benefits of certainty, visibility and irrevocability.

Single Immediate Payments are the core transaction within the UK Faster Payments Service, developed and operated for CHAPSCo by VocaLink. Development of a similar Immediate Payments Service for international markets has highlighted the potential benefits of integrating features to support better the initiation and notification of receipt of Immediate Payments through mobile phones. Mobile phones offer an increasing range of immediately-delivered services on a very convenient platform. Adding the convenience of the mobile phone to the immediacy of Immediate Payments offers a very attractive proposition.

This report presents the findings of an independent market research programme that sought feedback from both consumers and SMEs (small and medium enterprises) to the VocaLink Immediate Payments proposition, focusing particularly on mobile phone-initiated transactions. The aim is to understand what is important when making and receiving Immediate Payments.

To conduct this research, VocaLink Consulting Services appointed an independent agency, ACCORD Research Consultancy, experts in the field of B2B and consumer interviewing.

Consumer research objectives

The key objectives in terms of the Immediate Mobile Payments proposition were to:

- Quantify the appeal of the Immediate Mobile Payments concept
- Test the appeal of making and receiving payments via mobile to individuals and to businesses
- Provide qualitative insight into the appeal of the new concepts.

SME research objectives

To provide qualitative insight into the appeal of the new concept, specifically to:

- Explore what they would use Immediate Mobile Payments for and whether they would ask businesses/customers to pay by this method
- Establish the perceived value of Immediate Mobile Payments and the amount they would be willing to pay for the benefits.

Research methodology

Immediate Mobile Payments quantitative survey

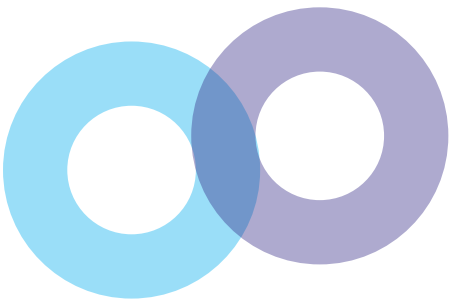
A survey was conducted via a representative online panel of 2,000 British adults holding bank accounts. The data was weighted to match the profile of the British adult population. An online panel was chosen rather than a telephone omnibus because this accommodated a demonstration of the proposition to respondents.

Respondents within this sample were also identified as sole traders, self-employed or running small businesses. This provided a sample of 301 SMEs and sole traders.

Qualitative insights

In order to provide more qualitative insight to the research, in-depth telephone interviews were conducted.
A comprehensive qualitative insight programme comprising 40 in-depth interviews was conducted in July 2010. There were 16 consumer telephone interviews and 24 SME telephone interviews conducted on a 1:1 basis, moderated by the independent research director of ACCORD. All interviews were conducted in accordance with the Market Research Society's code of conduct.

The consumer interviews included a mix of men and women of different social grades and ages. The SME sample was split into 8 sole traders, 8 small businesses and 8 medium businesses.



Executive summary

The Immediate Payments proposition for mobile phone appeals very strongly to consumers. Two in five of all those with bank accounts and over half of those who already make online payments believe it would be very or extremely valuable.

Widespread appeal reflects ease and convenience. Many already find it very useful to make online payments and the prospect of making similar transactions without the barriers of locating a PC and logging on is highly appealing.

In addition, being able to make such payments via a mobile phone brings great peace of mind. It means not having to worry about being short of cash and also makes it easier to send money to friends and family.

The only major reservation felt about the proposition relates to security, as is often the case with any new technology-based financial service. People want the convenience of Immediate Mobile Payments but they also want to be reassured that the service is secure. Consumers are used to pins and passwords and assume such security provides adequate fraud prevention. However, security measures must not become so cumbersome or prohibitive to the extent that they impair the user experience.

The research reveals that the proposition offers real value: consumers and sole traders are prepared to pay for this service. Most of those who are excited by the service envisage using it occasionally when convenience and immediacy are most important. However, some view the service as 'electronic cash' and envisage using it extensively. It also seems likely that occasional users will find the service useful and convenient and will increase usage as any doubt about security is assuaged. As mobile phone usage continues to proliferate, Immediate Mobile Payments has the potential to become ubiquitous, initially among the younger generation. Awareness is likely to be disseminated virally: through word of mouth and social networking sites as well as bank recommendation.

Consumers are still interested in the service even if there is an associated cost. The most popular option of those tested was a 5p per transaction with 30% definitely or very likely to use the service. In addition, the appeal to sole traders over traditional payment methods is so strong that they would be willing to incur the cost of the payment themselves rather than passing it on to customers.

The research indicates that 4 in 10 sole traders/small businesses find the Immediate Payments mobile phone concept very appealing and a further 36% said it was fairly appealing. The key drivers were: being paid straight away, the certainty of being paid, being paid on time, and not having bounced /delayed cheques. Those whose business is with consumers, such as electricians, financial consultants, sports therapists, locksmiths and plumbers, were most impressed with this service. They are happy to pay any (reasonable) charges that customers would incur if customers paid them this way.

Immediate Mobile Payments

Overall appeal of Immediate Mobile Payments to consumers

The respondents were shown a series of illustrations that outlined how the Immediate Payments proposition would work via mobile phones (see Appendix) to demonstrate the customer journey. Reaction to this was collated and quantified. It was found that two in five British consumers with bank accounts (42%) indicate that it would be an extremely or very valuable method of payment (*see Figure 1*).

This level of interest is among the highest ever recorded for propositions by ACCORD, and it rises even further to one in two among those already using online payments (53% say extremely or very valuable), or have a contract mobile phone (49%) and those aged under 35 (55%).

When asked about the allure of the idea, people generally suggest it is an easy, convenient and quick method of payment (*see Figure 2*).

Drivers of consumer appeal

People who are already using online payments like the fact that they will not need to access a PC or go through the usually complex process of logging in. A mobile phone is considered much more accessible, easy and convenient.

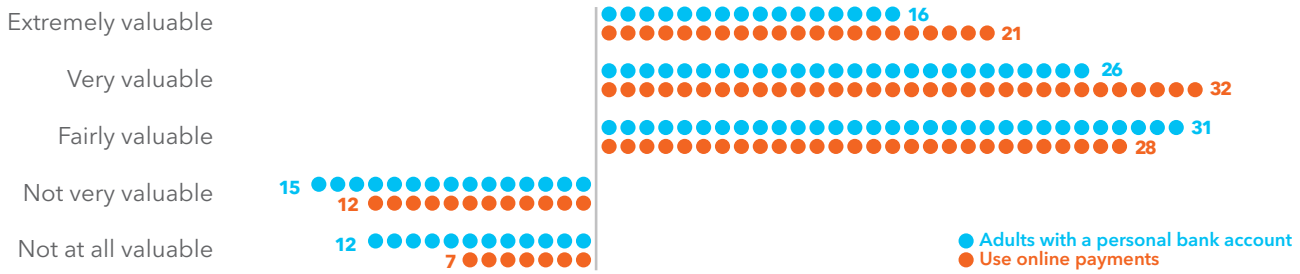
Consumer reaction to Immediate Mobile Payments is very positive as the following comments demonstrate:

"You do not need to be home or by your computer to do this. You can use it anywhere."

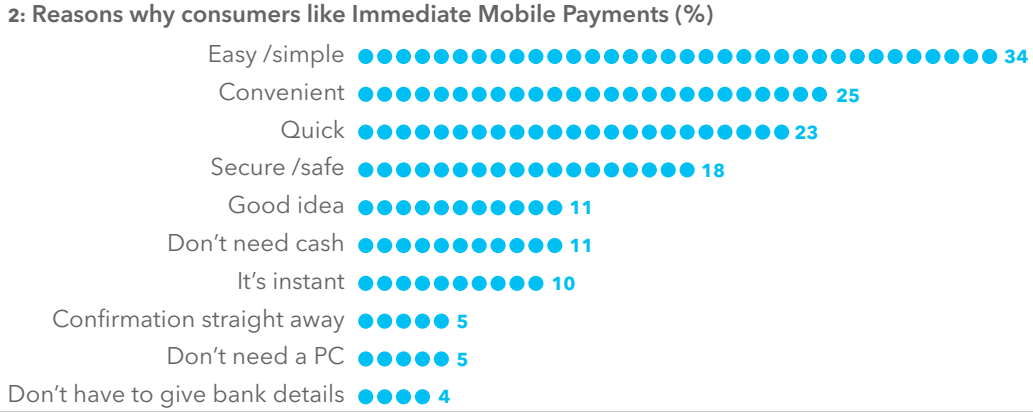
"I don't always have access to my laptop but I always have my phone with me everywhere I go."

"I always have my phone with me and it would enable me to pay at once without having to switch my PC on."

1: Appeal of Immediate Mobile Payments among consumers (%)



2: Reasons why consumers like Immediate Mobile Payments (%)



"It is much quicker and more convenient while still safe and secure. You can do it from anywhere and do not need internet connection."

Other people like the fact that they do not have to carry cash:

"It means I no longer need to carry cash, it is thus more secure."

"No need to carry large amounts of cash. Just make sure you have your mobile phone with you."

Many people envisage or remember situations where this would have been helpful, as illustrated by these comments:

"It's better sometimes to have the money go straight into your bank account. If you collect cash from everyone for a present you find you've spent it all and then the credit card bill arrives and you've spent all the money."

"I have been in many an urgent situation where this method would've been ideal."

The one in four (27%) who do not find the idea very valuable are mainly concerned about security or are not regular mobile phone users (*see Figure 3*).

Figure 3 shows the spontaneous concerns of consumers who fail to find the Immediate Mobile Payments proposition valuable.

Concerns about security tend to focus either on the scenario of the phone being stolen or just a general perception that mobile phones are not a secure medium.

"I would be so concerned about security that I would rather use a computer or go into a bank, so this method is not very valuable to me, though I may consider it in an emergency."

"I like to use cash as it feels safer. Don't know who will intercept the money being sent, due to advances in technology."

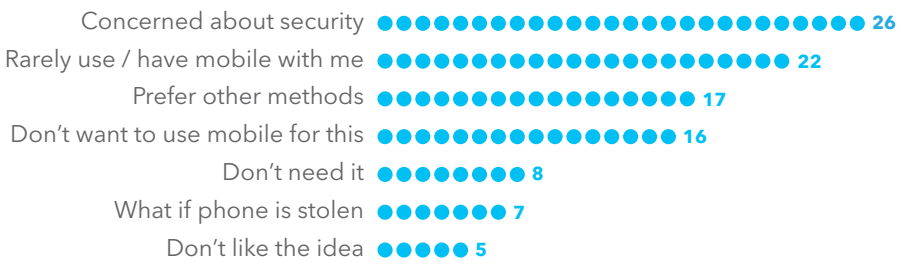
"Using a computer through my bank's website has no cost and it is too easy to lose a mobile with financial details on."

"You could be mugged and forced to make payments by your assailant."

Others simply do not always have a mobile phone to hand and so the benefits of convenience and ease are not relevant.

"I only carry a mobile phone to make calls in an emergency. I cannot help feeling a little suspicious of a system which transfers money so easily and quickly. Probably it is an 'age' thing and senior citizens would mainly feel as I do."

3: Concerns of consumers who do not find Immediate Mobile Payments valuable (%)



"Not everybody has a mobile phone. Not everybody always has it with them. Not everybody wants to give their mobile number."

When all potential users are asked about their concerns about using a mobile phone to make payments the number one issue is security (and the phone being stolen).

When presented with a list of eight possible concerns each one is something that at least half the respondents would worry about at least a fair amount. After security, the top issue is ensuring you are paying the right person (72% are concerned a great deal or fair amount). Other issues tend to be about the universal acceptability of the method – being supported by all banks, phones and retailers (*see Figure 4*).

The respondents were presented with a variety of scenarios and asked which method of payment they would choose in each case: Immediate Payments, cash, cheque, debit card or credit card.

Immediate Mobile Payments was the most popular payment option when people considered which method to use for transferring money to friends or family (55% chose it) and when paying urgent bills (44%).

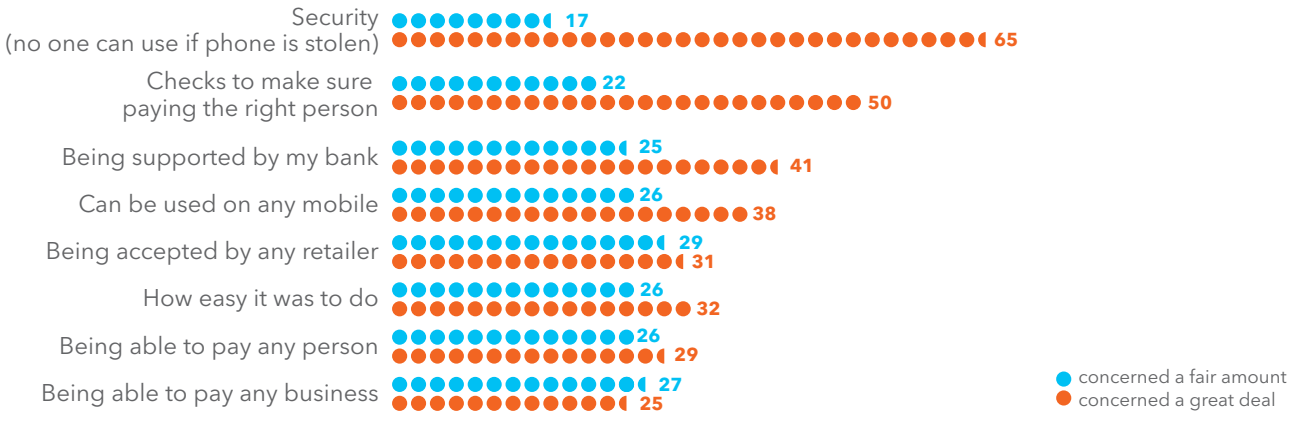
The in-depth interviews show that it is especially valued under these circumstances because of its immediacy – you can make the payment there and then without having to log in to an online bank account and you know the money has arrived immediately. The same reasons are given for choosing Immediate Mobile Payments to pay someone you know who has bought you tickets.

"You feel really bad that you owe them money. They're a friend and you don't want to put them out so you want them to get the money as quickly as possible and with this you both know the money has been transferred straight away."

With these scenarios including the payment of an urgent bill the benefit is peace of mind.

"You're always worried about if the money has got there or not and if it's late (with a bill) then you always have that risk of a huge charge for late payment. This would take the worry out of it."

4: Possible concerns from a prompted list (%)



Consumer willingness to pay for Immediate Mobile Payments

In the research discussions so far there has been no mention of cost – and the typical bank account holder assumes the service would be free since all the other payment options considered have no obvious charge (cash, cheques, standard credit transfers and Direct Debits).[1]

We asked how likely they would be to use Immediate Mobile Payments if either they had to pay a monthly subscription (from £1 to £5) or a fee per transaction. (The order of the amounts presented was randomised to avoid any research effect).

Consumers are still interested in the service even if there is a cost attached. The most popular option of those tested would be 5p per transaction with 30% definitely or very likely to use the service.

A low transaction cost most appeals because people mainly see Immediate Mobile Payments as something that is particularly valuable in exceptional circumstances, for example when they have to transfer money to someone urgently or they are caught short of cash. It is, initially, less likely to be seen as something they would use for regular, day-to-day transactions. Hence, a subscription makes less sense to them and can seem relatively expensive if they only occasionally use the service (*see Figure 5*).

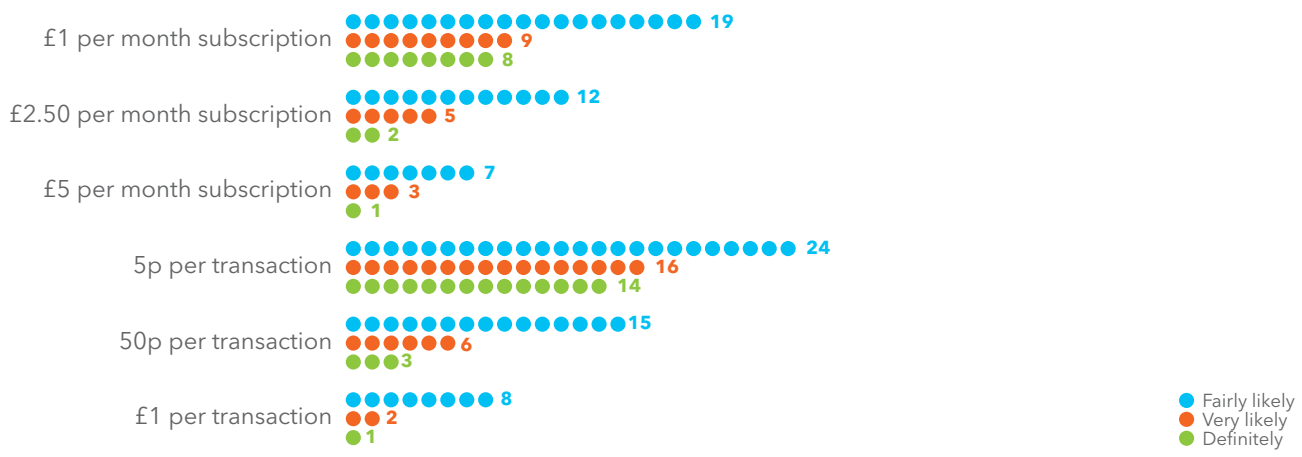
Those who say they would definitely pay for the service are more likely to be people who currently make payments from their online bank and who are mobile phone customers on a contract rather than 'pay as you go', and are aged under 55.

"I hate carrying coins and cash. I would use this all the time. I would definitely use it for cabs and anything which costs more than a couple of quid. It is much safer than carrying all that cash."

"I always have my phone with me, I am always texting people and this just seems like I could text people cash. It means you can do it there and then – no hanging around, no forgetting to pay people, which can be so embarrassing!"

1 Research on UK Faster Payments – see "*Faster Payments: The Voice of the Customer*", VocaLink Consulting Services Report, October 2010.

5: Willingness to pay for Immediate Mobile Payments (%)



Important factors in current online payments

In order to understand what consumers currently value when making payments, online users were asked to rate the importance of a number of factors.

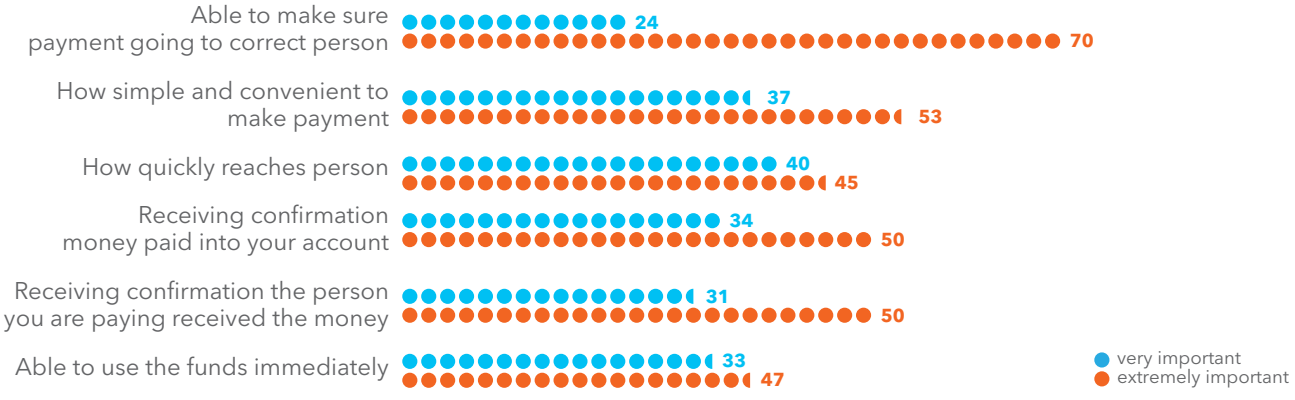
The single most important factor is making sure the payment goes to the correct person – 94% saying it is essential or very important. Similarly, we saw in Figure 4 that this was the second most important concern when people considered Immediate Payments via mobile phones (*see Figure 6*).

Nearly everyone says the speed with which the payment reaches the recipient is at least fairly important – 85% say it is very important or essential.

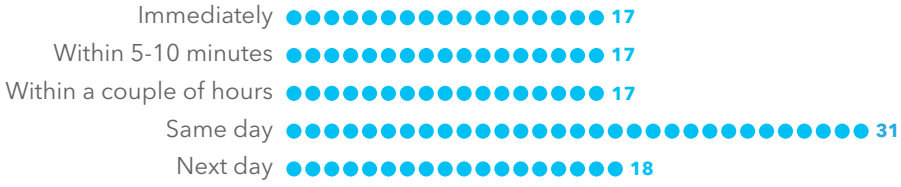
Those saying speed was important were then asked exactly how quickly a payment needed to be made. One in six (17%) say that funds need to reach the recipient immediately, with the same proportion saying payment needs to arrive within 5 to 10 minutes and another sixth saying within a couple of hours. Only 18% say it does not need to be the same day (*see Figure 7*).

This may reflect the fact that whilst people would like a payment to be delivered as soon as possible, their experience of existing payments leads them to expect some delay.

6: Benefits of making online payments (%)



7: Required deadline for payment to reach recipient (%)



The provider of the service

During the in-depth telephone interviews we explored the issue of who might be providing this service.

The assumption of most is that it would be provided either by the mobile phone companies or the banks. Consumers are reassured if the provider is a large, well-known company, for example Tesco or BT. Ideally, the company would have either a financial or technological slant but as long as it is substantial and well known, then that is sufficient to reassure most.

People do mention that the system would be most attractive and workable if widely spread, and well perceived as a service.

This is a fairly common view with any new service. Here there is a significant group who like the idea in principle but stress that they would only use it after it has been widely tested and proven to be secure.

Appeal of Immediate Mobile Payments to SMEs

As part of our sample of the 2,000 consumer bank account holders, 301 were identified as sole traders, small business operators or self-employed people who received payments. This group represented a valuable insight into how appealing Immediate Payments would be for SMEs.

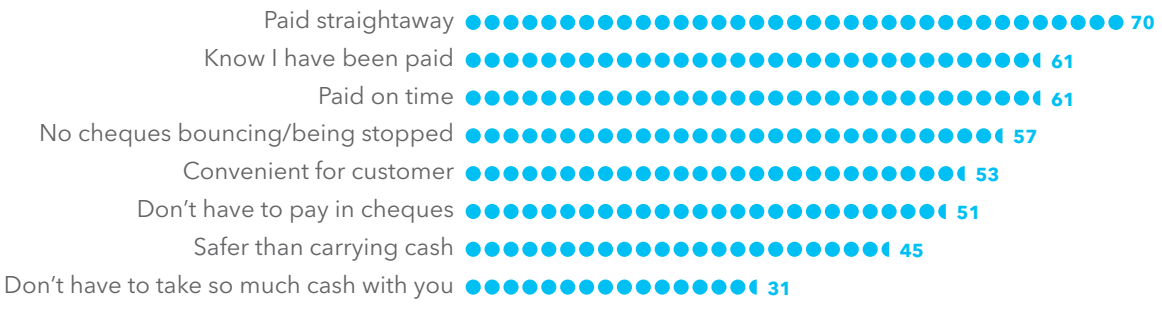
When asked to cite the appeal of Immediate Mobile Payments, 40% of this SME segment responded 'very appealing' and 36% 'fairly appealing', leaving only a quarter (24%) who said it held 'little or no appeal'.

Being paid straightaway is the most widely perceived benefit of Immediate Mobile Payments (70%), followed by the certainty of payment, avoiding late payments and 'bouncing' traditional payment methods, including cheques, cash, cards and credit transfers (*see Figure 8*).

We also spoke to 24 sole traders, small and medium-sized businesses, through in-depth telephone interviews to understand the potential value of Immediate Payments to them.

Interest was very high among one particular segment – trades people. The key characteristics of this segment are that they conduct face-to-face transactions with consumers (not businesses) and are mainly paid in cash or by cheque. Examples of enthusiastic respondents included plumbers, heating engineers, electricians, locksmiths and builders.

8: Appeal of Immediate Mobile Payments to SMEs (%)



Trades people really like Immediate Mobile Payments for several reasons – most of which show advantages over cheques:

- Faster access to the money, which aids cashflow
- Saves the cost and time of banking cheques
- Guarantees payment (no bounced / stopped cheques)
- Universal – they all possess mobile phones
- Better than cash – when paid in cash, the money can easily be spent which means it is not clearly accounted for and may be unavailable to settle the bills for which it is intended.

This group was consistently willing to bear the cost of the payment in order to encourage customers to use it – especially if it was lower than the cost of banking a cheque. Many feared that customers would prefer to pay by a free cheque or another traditional method if Immediate Payments incurred a fee even though the trades people would far prefer the new method.

"It's loads better than cheques, they just hang on to your money for days, then they get lost. We lost a cheque the other day, because someone had it in his pocket and goodness knows where it went." – Builder, North East

"I would pay £25 - £30 a year to be able to offer this to my customers. It makes sure I get paid and get paid straight away and it saves me a lot of hassle." – Electrician, South East

"If I get called out to do some work just as a one off, it would be good to get paid that way so I could say that's £50. And then they could give it to me straight away, I know I've got it, I don't have to worry about invoicing or sending paper invoices and waiting for cheques. So somebody could pay me and there's no excuse. That would be great." – Security Consultant, North East

"We'd have to incentivise the customer to use it. They're going to prefer a free cheque and any new thing like this they're going to worry about security." – Plumber South West

"We know cheques are going out and we have been looking at card machines but they cost £400 or £500 and there are two of us so that is an exorbitant cost. This would be much better." – Locksmith, South East

"I'm going off to see somebody new that I haven't seen before, the common way that they would pay me probably would be either in cash or a cheque, both of which I don't particularly like. So if we could actually do an instant payment and I could verify they'd paid, that would be perfect." – Financial Consultant, Midlands

"I like it. It sounds simple and I often find I'm walking around with cheques in my pocket for four days." – Plumber, North West

"I hate going down to the bank and it's always the case that I get paid Friday afternoon and I don't get to the bank until Monday afternoon and then the money's not in my account until the end of the week. And I've already paid for all the supplies." – Heating Engineer, South East.

Other businesses did not find the proposition so appealing, especially medium-sized companies, business-to-business sectors, those who were office-based and used to payment via Bacs rather than face-to-face transactions.

The main issues with mobile payments for this group were:

- Paying via a mobile phone was not 'business-like' or 'professional'.
- For large amounts it did not seem safe
- It seems to lack a paper trail for audits
- They do not normally receive payments immediately: they invoice and expect payment 30 days later
- They are big fans of online banking and since they are office-based and in front of a PC, a mobile phone-based system was less rather than more convenient.

For these larger, office-based businesses the one potentially appealing feature is that it would be cheaper than credit cards (no 1.5% - 2% fee). Some small retailers might consider it for that reason. For these people, Immediate Payments via online banking would be a more logical answer.

"We're talking thousands and thousands of pounds for our clients and I think they would want everything to go through their accounts department."

"I'm running a business, I don't want to sit here looking at my mobile phone, so is there another way that I can tell whether somebody's paid me without sitting looking at a mobile phone? I don't want to sit here doing business on a mobile phone."

"Security would always be a question with me and I'm just not a person that likes to use that sort of technology for paying bills and things. I'm afraid I like to see hard copies in front of me."

Immediate Mobile Payments research – key findings

The concept of Immediate Mobile Payments appeals strongly to 42% of consumers with bank accounts and half of those who already make online bank payments:

- 42% of people who have a bank account say they find the idea very or extremely valuable. 53% of those who make online bank payments are as interested
- Interest is highest among those aged under 35 and on a contract mobile phone.

Those who like the idea see it as a convenient and easy way to make payments:

- It frees you to make payments anywhere, without the need to access a PC and means you do not have to carry money. It is especially useful in emergencies.

The two main barriers are concerns about security and people not having a mobile phone accessible:

- People are concerned about their phone being lost or stolen and the general safety of making payments via a mobile
- Others do not find the concept appealing because they do not use a mobile phone much or have them readily available (especially older account holders).

Immediate Mobile Payments would be preferred to cash, cheques or cards as a way of transferring money to friends or family or paying an urgent bill:

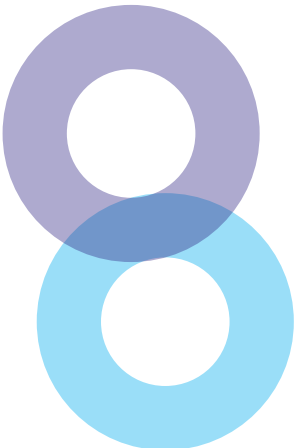
- 53% choose it in preference to cash, cards or cheque to transfer money and 44% choose it for paying urgent bills
- Over a quarter would also use it in preference to cash, cheques or card to reimburse someone who had bought them a ticket (34%), to pay a regular bill (30%) or to pay their share of a restaurant bill (23%).

Interest in Immediate Mobile Payments remains even if people have to pay to use the service and interest is higher on a per-transaction basis rather than a monthly subscription:

- 30% are very or definitely likely to use Immediate Mobile Payments if it cost 5p per transaction and 17% if it cost £1 per month. At the higher price points tested, interest dropped to around one-tenth of that figure
- After calibrating the stated usage for over claim it is likely that about 14% of all bank account holders would use Immediate Mobile Payments if it cost 5p per transaction and 9% would pay £1 per month to use the service
- This reflects the fact it is presently seen as most valuable for occasional/emergency usage.

Three quarters of sole traders and small businesses interviewed find Immediate Mobile Payments appealing.

Being paid straightaway is a key driver for SMEs.



Appendix

Demonstration of the Immediate Mobile Payments proposition to respondents

Person A wants to pay person B £30

This could be paying a plumber for work, paying a friend for a theatre ticket, parents wanting to send money to their child, or to pay a taxi driver.

Simplicity:

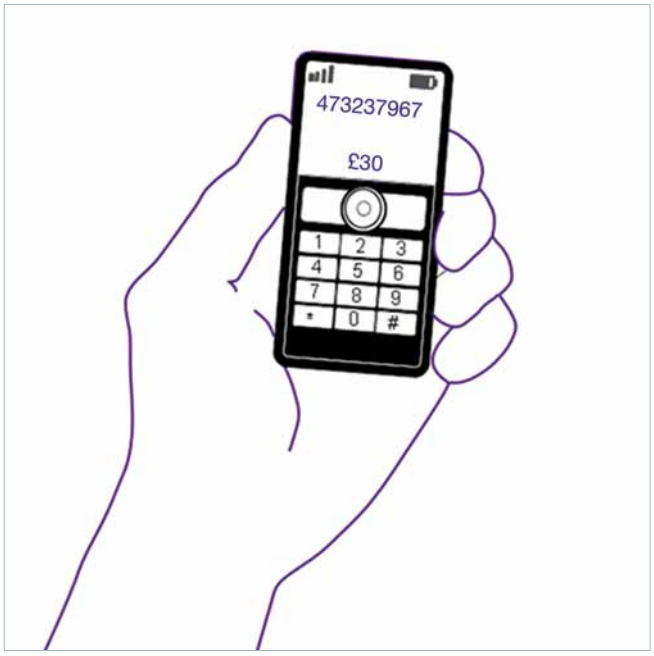
- Any situation, anyone you want to pay, whether face-to-face or remotely.

Convenience:

- Any time: 24 x 7.

Security:

- Eliminates the need to carry cash.



Person A uses a secure mobile banking service on their mobile phone to enter the phone number of the person they want to pay and the amount they want to pay them, £30 in this example.

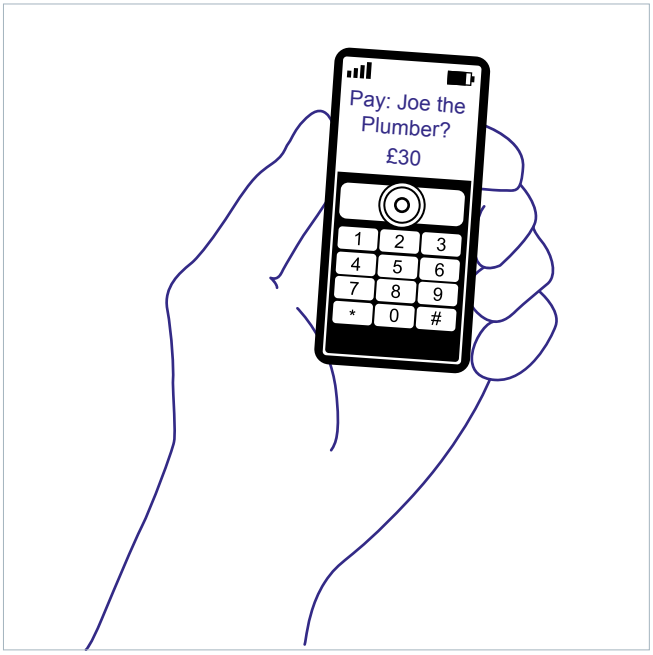
Convenience:

- You always have your mobile with you
- You can simply use a phone number to send the payment
- The payments application is simpler than online banking, with minimal key strokes.

Security:

- Neither party has to reveal their bank account number
- The phone is secure so only you can make payments
- The amount that can be sent per day or per transaction can be capped by you.

These illustrations were shown to the respondents in the Immediate Payments survey.



The system confirms the person to be paid. The payer confirms the payment and sends the payment which goes immediately.

The person receiving the payment gets an alert on their mobile or checks their bank account balance online or at an ATM, and confirms that the credit has been applied. They receive the payment within seconds from the person sending it.

This new 'Immediate Mobile Payment' is:

- Convenient: you can pay anyone, 24 hours a day whether you are with them or not. You only need to have your mobile phone with you in order to pay someone
- Easy: enter a phone number to send a payment – much simpler than making a payment via an online bank
- Immediate: both parties can see the money has been paid straightaway, so you can complete transactions there and then – no waiting for payments to arrive before receiving delivery. The person receiving the payment can immediately use the money – no waiting for payments to clear
- Secure: you do not need to carry cash or hand cash over and the person being paid knows they have received the money. Neither person has to reveal their bank account number. The phone is secure so only you can make payments. You can cap the amount that can be sent
- Compatible with online payments: you can send a payment from your mobile and see it arrive online if you want to, or you can send it online (using a mobile phone number) and see it arrive on your mobile.

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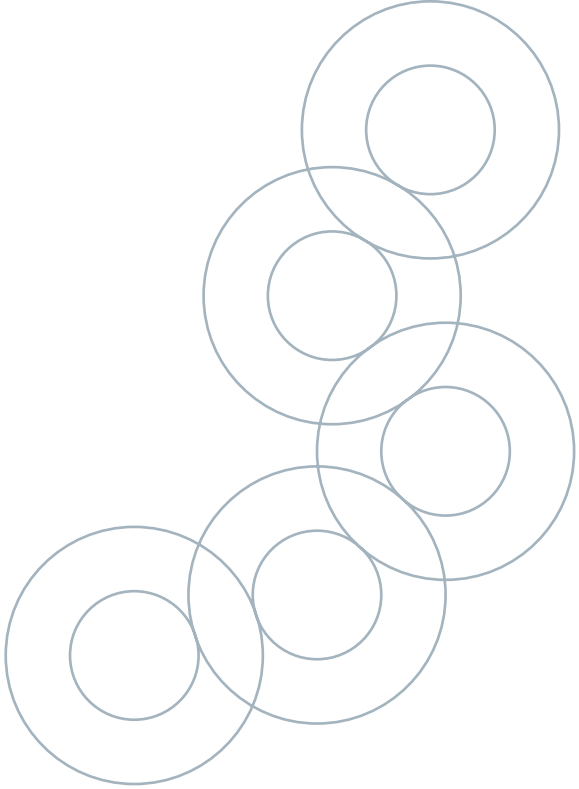

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Appendix D – Immediate Payments System Settlement Risk Manager

The attached description of VocaLink's Settlement Risk Manager is an excerpt from our Immediate Payments Service (IPS) documentation. This supplements the information included in question 38.

D.1 IPS Settlement Risk Manager

D.1.1 Introduction

The Settlement Risk Manager is the element of the Central Switch that determines, on a transaction by transaction basis, whether a payment request is allowed to be passed from the Sender to the Receiver, thereby creating a liability position between the two Members.

The Settlement Risk Manager determines whether, for any given payment request, the acceptance of that payment would result in a debit position for the sender that exceeds the level of risk allowed for that Member by the Scheme. If the value of the existing liabilities, plus the new payment request, exceeds the agreed risk position for that Member, the payment request is rejected. If the value of the existing liabilities plus the new payment request is less than or equal to the agreed risk position, the payment request is accepted.

For each accepted payment, the value of the payment is added to the previous liability, thus decreasing the Member's available liquidity in the Scheme.

When a Member receives and accepts a payment request, the value of the payment request is credited to the Member's liability position, thereby reducing their indebtedness and increasing their liquidity in the Scheme.

The maximum Settlement Risk position is determined by the Scheme in consultation with the Member. The position may be enforced through the imposition of a Debit Cap. This effectively limits the value of debits a Member may make, irrespective of the Settlement Model. In real-time settlement models, this may be an absolute value that is directly adjusted as debits and credits are applied to the settlement account. In a deferred settlement model, the accumulating debt within the deferred cycle is compared against the Debit Cap. If the accumulating debt plus the debit being processed would exceed the Debit Cap, the payment request is declined.

Movement against the Debit Cap can be advised by Network Management Messages (NMMs) (q.v.). The NMMs described later may not always be appropriate, especially if a real-time settlement model is being followed.

The Settlement Risk Manager is designed to work in association with the Workflow Manager and the different settlement Models that may be supported.

D.1.2 Settlement Models

The liability position can be maintained against the specific configuration of settlement that is required. There are two basic models that are available. These are:

- Deferred Settlement Model
- Real-time Settlement model.

D.1.3 Deferred Settlement Model

In a Deferred Settlement model, the liability position reflects the amount that will fall due for that Member to pay/receive at the next Settlement event, depending on whether they are a net debtor or creditor. The Member's liability position is updated with the results of each Settlement Event – a net debit position is adjusted by a single credit transaction, while a net credit position is adjusted by a single debit transaction.

This is the basic model adopted for the UK's Faster Payments Service.

D.1.4 Real-time (Net) Settlement Model

In a real-time settlement model, the liability position of the actual settlement account at the Settlement Agent is updated on a transaction by transaction basis. This is Real Time Global Settlement (RTGS) and is not appropriate for bulk clearing systems such as IPS due to the load it would impose on the RTGS system.

To overcome this issue, the actual settlement account at the Settlement Agent is shadowed in the Settlement Risk Manager, and it is this shadowed position that is updated. Each individual transaction impacts the shadowed account directly. A Settlement Event then becomes the process of reflecting the transactional changes applied to the shadowed account back to the actual master Settlement Account.

This necessitates that the account at the settlement agent (and therefore the "shadow account" in the Immediate Payments system) requires a pre-funding "float" from the Member bank. Each settlement event will in effect be a credit or debit to that float level to ensure it remains at the optimum position for the forthcoming settlement cycle.

This is the model adopted for the standard version of IPS.