Payments System Board Annual Report

2017

RESERVE BANK
OF AUSTRALIA

RESERVE BANK OF AUSTRALIA

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Philip Lowe
GOVERNOR

25 August 2017

The Hon Scott Morrison MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

RESERVE BANK OF AUSTRALIA PAYMENTS SYSTEM BOARD ANNUAL REPORT 2017

I am writing to seek your agreement to the tabling in the Parliament of the Payments System Board Annual Report for 2017.

In terms of the *Reserve Bank Act 1959*, the Payments System Board is required to inform the Government, from time to time, of the Reserve Bank's payments system policy. There is no statutory requirement to table an annual report, but tabling has proven a useful way of publicising the work of the Payments System Board.

Yours sincerely

Philip Lowe

Payments System Board

Annual Report 2017

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Governor's Foreword

Technological change is continuing to reshape Australia's payments system. New technologies are making new products available and changing business models. The Payments System Board has devoted significant time to understanding these changes as it carries out its responsibilities to promote efficiency and competition in the payments system and the overall stability of the financial system.

Over the past year there has been further progress on a major industry effort to modernise Australia's payments infrastructure, with the New Payments Platform (NPP) expected to commence operations around the end of 2017. This effort stemmed from the Board's 2010–12 Strategic Review of Innovation in the Payments System, which concluded with a call to the industry to develop a payment system that would allow Australians to make real-time and data-rich payments on a 24/7 basis with easy-to-remember addresses. The core NPP infrastructure is ready and participating institutions are now in a comprehensive industry testing program. The Reserve Bank is an NPP participant and has built the underlying settlements architecture, the Fast Settlement Service, which was completed on schedule and within budget. The Board recognises the significant effort by industry in developing this new world-class infrastructure.

The Board has also been monitoring developments in other technologies, including distributed ledger technology (DLT), digital currencies and payments-related financial technology (or fintech) more broadly. It is important for regulation to facilitate innovation and remain technology neutral. The Board has taken a close interest in ASX Group's exploration of a DLT solution as a possible replacement for its CHESS clearing and settlement system and has discussed the prospect that technological changes have increased the feasibility of competition in the settlement of cash equities transactions. The Board also discussed the benefits that could arise when customers are able to make their banking and payments data available to other entities and it has encouraged the payments industry to work collectively to facilitate the secure sharing of such data.

The Bank has recently undertaken its regular three-yearly Consumer Payments Survey to understand changes in payment patterns. The results of the survey showed that Australian households are continuing to switch from paper-based ways of making payments, such as cash and cheques, towards electronic payment methods, including 'tap and go' cards for many lower-value transactions. It is likely that this trend will continue for some time yet. Cash, though, still accounts for a material share of consumer payments, particularly for lower-income and older Australians and it remains an important part of the payments system. To ensure that Australians continue to have access to high-quality, secure banknotes, the Bank is upgrading the existing banknotes, with the new $10 banknote to be released in September 2017, following the release of the $5 note in September 2016.

The Board's regulatory policy work has focused on changing payment technologies and payment patterns. In December 2016, the Board initiated a consultation on competition issues associated with dual-network cards and mobile wallet technology. The Bank's concerns were addressed through commitments by industry participants, which should ensure that households have greater choice and convenience when making payments through mobile devices and improve the ability of merchants to encourage the use of lower-cost payment methods. The Board also considered the regulatory framework for access in the ATM industry in light of the technological and structural changes that are taking place in that industry. The Board has indicated that these changes may allow a greater role for industry self-regulation and has provided the industry with some high-level principles that could guide the industry in its deliberations.

Following the conclusion of the Review of Card Payments Regulation in 2016, new interchange standards took effect on 1 July 2017. In addition, the new surcharging standard is now in effect for all merchants, after being introduced for large merchants in September 2016. This new standard ensures that consumers will not face surcharging that exceeds the merchant's cost of acceptance. The Bank has been carefully monitoring the impact of these changes. There has been a significant change in surcharging practices in the airline industry, where the shift from dollar-based surcharges to percentage-based surcharges has resulted in a reduction in the fees that apply for most customers when they choose to pay by debit or credit cards rather than by other electronic methods.

The Bank has oversight responsibilities for clearing and settlement (CS) facilities and systemically important payments systems, jointly known as financial market infrastructures (FMIs). The continued and safe operation of these entities is crucial for the overall stability of the financial system. A key focus of the Bank's oversight over the past year has been the governance of cyber risk. The Bank is committed to a high level of transparency and its annual assessments of the CS facilities are published. The Board also pays close attention to the oversight of the Reserve Bank Information and Transfer System (RITS), Australia's real-time gross settlement system, which is operated by the Reserve Bank and used by banks and other financial institutions to settle their payment obligations with each other. The most recent assessment of RITS was published in May 2017 and concluded that RITS had observed all of the relevant international standards.

The Bank continues to participate actively in international policy work for FMIs. The past year has seen the publication of international guidance on the resilience and resolution of central counterparties and revised guidance on FMI recovery. The Bank is continuing to work with other domestic agencies to develop a resolution framework for FMIs. While the main protections against an FMI failing are robust risk management and strong oversight, the possibility of such failure cannot be entirely eliminated. A formal resolution regime would support the actions taken by public authorities in the event of the failure of an FMI, so as to foster financial stability.

In carrying out its work, the Bank works closely with industry participants and other regulators, including the Australian Payments Network (previously known as the Australian Payments Clearing Association), the Australian Securities and Investments Commission and the Australian Competition and Consumer Commission. The Board appreciates the cooperation offered by the Bank's counterparts and also recognises the important work being done by the Australian Payments Council.

The Bank's dedicated staff support the Board with calm professionalism and carry out their work to a very high standard. The Payments System Board joins me thanking them for their contribution to the efficiency and stability of Australia's payments system.

Philip Lowe
Governor and Chair, Payments System Board
25 August 2017

Functions and Objectives of the Payments System Board

The Payments System Board has a mandate to contribute to promoting efficiency and competition in the payments system and the overall stability of the financial system. The Reserve Bank oversees the payments system as a whole and has the power to designate payment systems and set standards and access regimes for designated systems. It also sets financial stability standards for licensed clearing and settlement facilities.

The responsibilities of the Payments System Board are set out in the *Reserve Bank Act 1959*, under which it is the duty of the Payments System Board to ensure, within the limits of its powers, that:

- the Reserve Bank's payments system policy is directed to the greatest advantage of the people of Australia
- the powers of the Reserve Bank set out in the *Payment Systems (Regulation) Act 1998* and the *Payment Systems and Netting Act 1998* are exercised in a way that, in the Board's opinion, will best contribute to controlling risk in the financial system, promoting the efficiency of the payments system and promoting competition in the market for payment services, consistent with the overall stability of the financial system
- the powers of the Reserve Bank that deal with clearing and settlement facilities set out in Part 7.3 of the *Corporations Act 2001* are exercised in a way that, in the Board's opinion, will best contribute to the overall stability of the financial system.

Under the Payment Systems (Regulation) Act, the Reserve Bank has the power to designate payment systems and set standards and access regimes for designated systems. The Payment Systems and Netting Act provides the Bank with the power to give legal certainty to certain settlement arrangements so as to ensure that risks of systemic disruptions from payment systems are minimised.

Under Part 7.3 of the Corporations Act, the Reserve Bank has a formal regulatory role to ensure that the infrastructure supporting the clearing and settlement of transactions in financial markets is operated in a way that promotes financial stability. The Bank's powers under that part include the power to determine financial stability standards for licensed clearing and settlement facilities.

This Report discusses the activities of the Board during 2016/17.

Governance

The Payments System Board is responsible for the Reserve Bank's payments system policy. Members of the Board comprise representatives from the central bank, the prudential regulator and five other non-executive members.

Payments System Board

The Payments System Board has responsibility for the Bank's payments system policy. The Board comprises the Governor, who is the Chair; one representative of the Bank appointed by the Governor, who is the Deputy Chair; one representative of the Australian Prudential Regulation Authority (APRA) appointed by APRA; and up to five other members appointed by the Treasurer for terms of up to five years. Members of the Board during 2016/17 are shown below and details of the qualifications and experience of members are provided on pages 11 to 19.

In September 2016, Philip Lowe succeeded Glenn Stevens as Governor and Chair of the Board. The Board's tribute to Mr Stevens on the occasion of his retirement is shown on page 17.

In November 2016, Michele Bullock succeeded Malcolm Edey as Deputy Chair of the Board, following Dr Edey's retirement from the Bank and Ms Bullock's appointment as Assistant Governor (Financial System). The Board's tribute to Dr Edey is shown on page 18.

Meetings of the Payments System Board

The *Reserve Bank Act 1959* does not stipulate the frequency of Board meetings. Since its inception, the Board's practice has been to meet at least four times a year and more often as needed. Four meetings were held in 2016/17, all at the Bank's Head Office in Sydney. Five members form a quorum at a meeting of the Board or are required to pass a written resolution.

Table 1: Board Meetings in 2016/17
Number of meetings

	Attended	Eligible
Glenn Stevens[a]	1	1
Philip Lowe (Governor)[b]	4	3
Malcolm Edey (RBA)[c]	1	1
Michele Bullock (RBA)[d]	3	3
Wayne Byres (APRA)	4	4
Gina Cass-Gottlieb	3	4
Paul Costello	3	4
Robert McLean[e]	1	2
Deborah Ralston[f]	2	2
Catherine Walter	4	4
Brian Wilson	4	4

(a) Glenn Stevens' term as Governor ended on 17 September 2016
(b) Philip Lowe's term as Governor commenced on 18 September 2016. He attended the August 2016 meeting as an observer
(c) Malcolm Edey's term on the Board ended on 28 October 2016
(d) Michele Bullock's term on the Board commenced on 29 October 2016 following her appointment as Assistant Governor (Financial System)
(e) Robert McLean's term on the Board ended on 28 November 2016
(f) Deborah Ralston's term on the Board commenced on 15 December 2016

Conduct of Payments System Board Members

On appointment to the Payments System Board, each member is required under the Reserve Bank Act to sign a declaration to maintain confidentiality in relation to the affairs of the Board and the Bank.

Members of the Board must comply with their statutory obligations in that capacity. The main sources of those obligations are the *Public Governance, Performance and Accountability Act 2013* (PGPA Act) and the Reserve Bank Act. Their obligations under the PGPA Act include obligations to exercise their powers and discharge their duties with care and diligence, honestly, in good faith and for a proper purpose. Members must not use their position, or any information obtained by virtue of their position, to benefit themselves or any other person, or to cause detriment to the Bank or any other person. Members must declare to the other members of the Board any material personal interest they have in a matter relating to the affairs of the Board. Members may give standing notice to other members outlining the nature and extent of a material personal interest.

Over and above these statutory requirements, members recognise their responsibility for maintaining a reputation for integrity and propriety on the part of the Board and the Bank in all respects. Members have therefore adopted a Code of Conduct that provides a number of general principles as a guide for their conduct in fulfilling their duties and responsibilities as members of the Board; a copy of the Code is on the Bank's website.

Remuneration and Allowances

Remuneration and travel allowances for the non-executive members of the Payments System Board are set by the Remuneration Tribunal.

Induction of Board Members

An induction program assists newly appointed Board members in understanding their role and responsibilities, and provides them with an overview of the Bank's role in the payments system and details of relevant developments in preceding years. Separate briefing sessions are tailored to meet particular needs or interests.

Policy Risk Management Framework and Board Review

Towards the end of 2016, the Payments System Board conducted its annual review of the key risks inherent in the consideration of payments policy and the payments policy risk register and control framework. Some changes were made to the risk register, mainly to incorporate feedback from regulated entities and consultation within the Bank to mitigate risks associated with poor policy processes and advice. The control framework was assessed to be operating effectively and managing risks adequately.

At the same time, the Board conducted its annual review of its own operation and processes. It concluded that Board processes were functioning effectively. Further enhancements were introduced to refine the management of meeting agendas and presentations to ensure optimal input from Board members.

Indemnities

Members of the Payments System Board are indemnified against liabilities incurred by reason of their appointment to the Board or by virtue of holding and discharging such office. Prior to 1 July 2014 these indemnities were in accordance with section 27M of the *Commonwealth Authorities and Companies Act 1997* (CAC Act), which specified when indemnity for liability and legal costs was not allowed. Indemnities given since 1 July 2014, when the CAC Act was repealed, have reflected the substance of the previous CAC Act restrictions. The terms of indemnification for new members of the Payments System Board were reviewed by the Reserve Bank Board in early 2017 and a revised form of indemnity, which continues to reflect the substance of the previous CAC Act restrictions, was approved in March 2017.

As the Bank does not take out directors' and officers' insurance in relation to its Board members or other officers, no premiums were paid for any such insurance in 2016/17.

Conflict of Interest Audit

The Bank has several distinct areas of responsibility in the Australian payments system: it owns, operates and participates in Australia's real-time gross settlement (RTGS) system, the Reserve Bank Information and Transfer System (RITS); it is a provider of transactional banking services to the Australian Government and its agencies; and it is the principal regulator of the payments system through the Board. This combination of functions is conventional internationally. The operation of the high-value payment system is a core central banking function in most major economies. In addition, central banks in the advanced economies typically have regulatory responsibilities for the payments system (though the breadth of mandates varies) and most also provide banking services to government.

While the various functions are conceptually distinct, their existence in the one institution may give rise to concerns about actual or perceived conflicts of interest. The Board and senior management of the Bank take very seriously the possibility of any perception that the Bank's policy and operational roles may be conflicted, especially since this could undermine public confidence in the regulatory and policy process.

Accordingly, the Bank has policies in place for avoiding conflicts and dealing with them when they do occur. The Board has formally adopted a policy on the management of conflicts of interests, which is published on the Bank's website.[1] Details of the steps taken to achieve compliance with these arrangements, including the minutes of informal meetings between departments, are audited annually, with the results presented to the Board. The most recent audit was conducted in July 2017 and reviewed by the Board in August 2017.

In the case of the Bank's oversight of RITS, the Board plays a governance role in managing conflicts of interest. In particular, while from February 2017 an internal FMI Review Committee has been given the formal responsibility to review and approve assessments of other FMIs, the Board has retained primary responsibility for approving the staff's periodic assessments of RITS.

1 Available at <https://www.rba.gov.au/payments-and-infrastructure/payments-system-regulation/conflict-of-interest.html>.

Payments System Board

The Board comprises up to eight members: the Governor (Chair), Assistant Governor, Financial System (Deputy Chair), Chairman of the Australian Prudential Regulation Authority (APRA) and up to five other non-executive members appointed by the Treasurer.

There were three retirements from the Board in 2016/17, former Governor and Chair Glenn Stevens in mid September 2016, former Deputy Chair Malcolm Edey in late October 2016 and Robert McLean in late November 2016. Tributes by the Board to Mr Stevens, Dr Edey and Mr McLean are shown on pages 17, 18 and 19 respectively.

August 2017

Philip Lowe

BCom (Hons) (UNSW), PhD (MIT)

Governor and Chair

Governor since 18 September 2016

Present term ends 17 September 2023

Philip Lowe was Deputy Governor from February 2012 until his appointment as Governor took effect in September 2016. Prior to that, he held various senior positions at the Reserve Bank, including Assistant Governor (Economic) and Assistant Governor (Financial System), where he was responsible for overseeing economic and policy advice to the Governor and Reserve Bank Board. Dr Lowe was Deputy Chair of the Payments System Board for five years from March 2004. He spent two years with the Bank for International Settlements working on financial stability issues. He has authored numerous papers, including on the linkages between monetary policy and financial stability. He is a signatory to The Banking and Finance Oath.

Other roles

Chair – Reserve Bank Board

Chair – Council of Financial Regulators

Chair – Financial Markets Foundation for Children

Member – Financial Stability Board

Co-Chair – Financial Stability Board Regional Consultative Group for Asia

Member – Bank for International Settlements Group of Governors and Heads of Supervision

Member – Trans-Tasman Council on Banking Supervision

Director – The Anika Foundation

Michele Bullock

BEc (Hons) (UNE), MSc (LSE)

Assistant Governor (Financial System) and Deputy Chair

Deputy Chair since 29 October 2016

Michele Bullock has held various senior positions at the Reserve Bank. Most recently, she held the position of Assistant Governor (Business Services). She also held the positions of Assistant Governor (Currency), Adviser for the Currency Group and, before that, Head of Payments Policy Department. In her current position as Assistant Governor (Financial System), she is responsible for the Bank's work on financial stability and oversight of the payments system.

Other roles

Member – Basel Committee on Banking Supervision

Member – Council of Financial Regulators

Wayne Byres

BEc (Hons), MAppFin (Macquarie)

Ex officio member

Chairman, APRA

Member since 9 July 2014

Present term ends 30 June 2019

Wayne Byres brings a wealth of experience and knowledge of prudential supervision and banking practices. He was appointed as a Member and Chairman of APRA from 1 July 2014 for a five-year term. His early career was at the Reserve Bank, which he joined in 1984. He transferred to APRA on its establishment in 1998 and held a number of senior executive positions in the policy and supervisory divisions. In 2004, Mr Byres was appointed Executive General Manager, Diversified Institutions Division, with responsibility for the supervision of Australia's largest and most complex financial groups. He held this role until the end of 2011, when he was appointed as Secretary General of the Basel Committee on Banking Supervision, based at the Bank for International Settlements in Basel. Mr Byres is a Senior Fellow of the Financial Services Institute of Australia.

Other roles

Member – Basel Committee on Banking Supervision

Member – Bank for International Settlements Group of Governors and Heads of Supervision

Member – Council of Financial Regulators

Member – Trans-Tasman Council on Banking Supervision

Gina Cass-Gottlieb

BEc (Hons), LLB (Hons) (Sydney), LLM (Berkeley)

Non-executive member

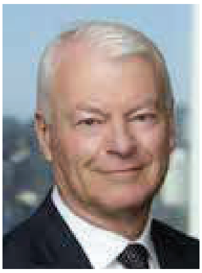
Member since 15 July 2013

Present term ends 14 July 2018

Gina Cass-Gottlieb has extensive expertise in all areas of competition law and economic regulatory advice and in the regulation of payments in Australia. Ms Cass-Gottlieb is a senior partner in Gilbert + Tobin's competition and regulation practice, advising and representing corporations, industry associations, government and non-government agencies. She has over 25 years' experience, including advising in relation to access arrangements in a range of sectors across the economy. Ms Cass-Gottlieb attended the University of California, Berkeley, as a Fulbright Scholar.

Other roles

Director – Sydney Children's Hospital Foundation



Paul Costello

BA (Canterbury), Dip. Bus Admin (Massey)

Non-executive member

Member since 15 July 2013

Present term ends 14 July 2018

Paul Costello has extensive experience in investments, governance and operations and has held a number of roles in the Australasian financial services sector. Most recently he served as the inaugural general manager at the Australian Government's Future Fund and also as the chief executive of the New Zealand Government's Superannuation Fund. Prior to these roles, he spent 15 years in the Australian wealth management industry. The Australian Government has previously appointed him in advisory roles to assist with the Stronger Super regulatory reforms and the Productivity Commission review of the superannuation sector.

Other roles

Chair – Investment Committee, QIC Global Infrastructure Fund

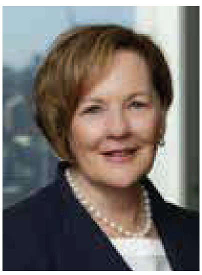
Director – AIA Australia Limited

Director – Qantas Superannuation Limited

Member – Six Park Investment Advisory Committee

Member – International Advisory Council of the China Investment Corporation

Member – Investment Committee – The Salvation Army Australia Southern Territory



Deborah Ralston

BEc, Dip. Fin Mgt, MEc (UNE), PhD (Bond)

Non-executive member

Member since 15 December 2016

Present term ends 14 December 2021

Deborah Ralston has extensive experience in financial services, with particular interests in financial regulation, superannuation, innovation and commercialisation. Professor Ralston is a researcher and recognised thought leader in financial services and has published widely in these areas. She has held senior leadership positions in Australian universities, including Dean of Business at the Universities of Southern Queensland and the Sunshine Coast, Pro Vice-Chancellor Business, Law and Information Systems at the University of Canberra, and most recently as Executive Director of the Australian Centre for Financial Studies. She has over 20 years' experience as a non-executive director on public and private sector boards. She is a Professorial Fellow at Monash University and a Fellow of CPA Australia and the Australian Institute of Company Directors.

Other roles

Chair – Australian Securities and Investments Commission Digital Finance Advisory Committee

Director – Mortgage Choice and Chair of Investment Committee – Mortgage Choice Finance Planning

Director – SMSF Association

Catherine Walter AM

LLB (Hons), LLM, MBA (Melbourne)

Non-executive member

Member since 3 September 2007

Present term ends 2 September 2022

Catherine Walter brings substantial experience and expertise in investment and corporate governance across many industry sectors, including banking, insurance, funds management, health services, medical research, education, telecommunications and resources. Mrs Walter is a solicitor and company director, who practised banking and corporate law for 20 years in major city law firms, culminating in a term as Managing Partner of Clayton Utz, Melbourne. She was a Commissioner of the City of Melbourne and for more than 20 years has been a non-executive director of a range of listed companies, government entities and not-for-profit organisations. Mrs Walter is a Fellow of the Australian Institute of Company Directors.

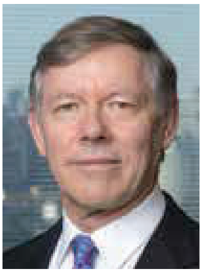
Other roles

Chair – Financial Adviser Standards and Ethics Authority

Chair – Melbourne Genomics Health Alliance

Deputy Chair – Victorian Funds Management Corporation

Director – Australian Foundation Investment Company



Brian Wilson AO

MCom (Hons) (Auckland)

Non-executive member

Member since 15 November 2010

Present term ends 14 November 2020

Brian Wilson brings extensive financial services experience, including involvement with both the funds management and investment management sectors. He has specialised in corporate financial advice. Mr Wilson was a Managing Director of the global investment bank Lazard until 2009, after co-founding the firm in Australia in 2004, and was previously a Vice-Chairman of Citigroup Australia and its predecessor companies. He is the former Chairman of Australia's Foreign Investment Review Board. Mr Wilson was a member of the Commonwealth Government Review of Australia's Superannuation System, the ATO Superannuation Reform Steering Committee and the Specialist Reference Group on the Taxation of Multinational Enterprises in Australia. In May 2017, Mr Wilson was awarded a Doctor of the University, honoris causa (DUniv) by the University of Technology Sydney.

Other roles

Deputy Chancellor – University of Technology, Sydney

Director – Bell Financial Group Ltd

Senior Advisor – The Carlyle Group

Retirements from the Board

Glenn Stevens AC retired from the Board on 17 September 2016

Malcolm Edey retired from the Board on 28 October 2016

Robert McLean AM retired from the Board on 28 November 2016

Glenn Stevens AC

BEc (Hons) (Sydney), MA (Western)

Governor and Chair

Governor from 18 September 2006 to 17 September 2016

Prior to his appointment as Governor, Glenn Stevens held various senior positions at the Reserve Bank, including Head of Economic Analysis and International Departments and Assistant Governor (Economic), where he was responsible for overseeing economic and policy advice to the then Governor and Reserve Bank Board. He was Deputy Governor from 2001 to 2006. In June 2014, Mr Stevens was awarded a Doctor of Laws, honoris causa (LLD) by Western University in Ontario, Canada. In the 2016 Queen's Birthday Honours List, Mr Stevens was appointed a Companion in the Order of Australia for eminent service to the financial and central bank sectors and to the community.

Other roles during his term as Reserve Bank Governor

Chair – Reserve Bank Board

Chair – Council of Financial Regulators

Chair – Financial Stability Board Standing Committee for Assessment of Vulnerabilities

Chair – Financial Markets Foundation for Children

Member – Financial Stability Board

Member – Bank for International Settlements Group of Governors and Heads of Supervision

Member – Trans-Tasman Council on Banking Supervision

Director – The Anika Foundation

Resolution passed by the Payments System Board – 19 August 2016

On the occasion of Glenn Stevens' final meeting after 10 years as Governor and Chair of the Board, members warmly expressed their appreciation for his outstanding contribution to the Board's deliberations in ensuring that it continued to meet its mandate for efficiency, competition and controlling risk in the Australian payments system. On behalf of all members, the Deputy Chair paid tribute to Mr Stevens' exemplary leadership of the Board and the Bank during a period of growing sophistication and challenges in the payments area. Members recorded their appreciation of Mr Stevens' dedication to public policy in a career spanning more than three decades, thanked him for his service to the Bank and the nation and wished him well in the future.

Malcolm Edey

BEc (Sydney), PhD (London)

Assistant Governor (Financial System) and Deputy Chair

Deputy Chair from 14 April 2009 to 28 October 2016

Malcolm Edey held various senior positions at the Reserve Bank, including in the Economic and Financial Markets Groups. Prior to his role as Assistant Governor (Financial System), Dr Edey was Assistant Governor (Economic). As Assistant Governor (Financial System), he was responsible for the Bank's work on financial stability and oversight of the payments system.

Other roles (as at 28 October 2016)

Member – Basel Committee on Banking Supervision

Member – Council of Financial Regulators

Resolution passed by the Payments System Board – 18 November 2016

Members recorded their appreciation for the Board's former Deputy Chair, Malcolm Edey, who had retired from the Reserve Bank and the Payments System Board towards the end of October, after seven and a half years on the Board and a career of almost 40 years at the Bank. Members paid tribute to Dr Edey's professionalism and integrity as a dedicated public servant. They recorded their appreciation and admiration for his thoughtful and consultative approach to the development of payments policy in Australia, as a member of the Bank's staff and through his wise counsel during the Board's deliberations. Members passed on their good wishes to him for the future.

Robert McLean AM

BEc (Stats) (Hons) (UNE), MBA (Columbia)

Non-executive member

Member from 29 November 2006 to 28 November 2016

Robert McLean has wide international business experience and a background in the financial sector, particularly in corporate strategy and organisational performance. Mr McLean is a company director and private equity investor. He had a 25-year career at McKinsey & Company, where he remains a Senior Advisor to the firm, and previously served on the boards of CSR Ltd, Pacific Dunlop Ltd and Elders Rural Services. He was Dean and Director of the Australian Graduate School of Management at the University of New South Wales from 2003 to 2006. Mr McLean attended Columbia University in New York as a Fulbright Scholar.

Directorships (as at 28 November 2016)

Chair – Australia Program Advisory Board, The Nature Conservancy (Australia)

Council Member – Philanthropy Australia

Director – Remerga Pty Limited

Director – The Centre for Independent Studies

Resolution passed by the Payments System Board – 19 August 2016

Members noted that, with his pending absence from the November meeting, this would be the final meeting for Robert McLean, as his term will end on 28 November 2016. On behalf of all members, the Governor paid tribute to Mr McLean's great professionalism and dedication, and expressed appreciation for his active and probing role in contributing to formulation of payments policy on a wide range of matters throughout his 10-year term as a member of the Board, drawing on his extensive experience in the business sector. The Governor also applauded Mr McLean's constructive and collegiate style and his strong support for the work of the Bank in the payments area over this period. Members wished him well in the future.

Accountability and Communication

The Payments System Board seeks to ensure a high degree of transparency and accountability around its actions through the Reserve Bank's communication program, which includes media releases, speeches, research publications, and community and industry liaison. The Bank also engages in various international forums relating to payment systems and financial market infrastructures (FMIs).

Relationship with Government and Reporting Obligations

As noted above, the responsibilities of the Payments System Board are set out in four acts: the *Reserve Bank Act 1959*, the *Payment Systems (Regulation) Act 1998*, the *Payment Systems and Netting Act 1998* and the *Corporations Act 2001*. The Board is afforded substantial independence from the government in the way that it determines and implements the Bank's policies. However, as discussed in this chapter, there are a range of reporting obligations in addition to the Bank's own policies on transparency and communication that serve to ensure the accountability of the Board.

This report represents the primary accountability vehicle with respect to the Bank's payments system responsibilities. The House of Representatives Economics Committee has, in its Standing Orders, an obligation to review the annual reports of both the Reserve Bank and the Payments System Board. The committee holds twice-yearly public hearings at which the Bank presents an opening statement on the economy, financial markets and other matters – including payments system matters – pertaining to the Bank's operations, and responds to questions from committee members. These hearings may include discussion of developments in the payments system and the Bank's payments system policy. The Bank periodically also makes submissions to parliamentary inquiries or other inquiries commissioned by the government.

The broader accountability of the Bank includes its obligations under the *Public Governance, Performance and Accountability Act 2013*. The Bank's annual report and the annual performance statement both cover aspects of the Bank's role in the payments system.

Communication

The Board seeks to ensure a high degree of transparency about its activities, goals and decision-making processes, both for accountability and to promote a better understanding of the Bank's policies and decisions.[2] Consistent with its statutory obligations, the Bank consults widely and at length before undertaking any regulatory action; where required, the Bank also publishes a Regulation Impact Statement as part of communicating any regulatory decision made by

2 For a detailed list of publications, see *'The Board's Announcements and Reserve Bank Reports'* (p 71).

Annual joint meeting of the Payments System Board and Australian Payments Council, 18 August 2017

the Payments System Board. It remains open to discussions with any and all parties that may be affected by the Bank's regulatory actions.

Media releases around Board decisions

The Bank publishes a media release in the afternoon immediately following the Board meeting, outlining matters that were discussed by the Board and foreshadowing any forthcoming documents to be released by the Bank. Media releases also accompany any major announcements following decisions taken by the Board.

Speeches

During 2016/17, senior Bank staff gave a number of public speeches and participated in discussion panels on payments system-specific topics. Speeches covered the regulatory framework for surcharging card payments and the ongoing evolution of the Australian retail payments system. Audio files and transcripts of these speeches are published on the Bank's website to improve accountability and communication.

Publications with other regulatory entities

During the year in review, the Bank also produced publications in conjunction with other regulatory entities constituting the Council of Financial Regulators (CFR), the coordinating body for Australia's main financial regulatory agencies. These included a set of minimum conditions for safe and effective competition in cash equity clearing, and a set of regulatory expectations applicable to the ASX Group's conduct in operating cash equity clearing and settlement services until such time as a committed competitor emerged.[3]

Research

The Bank's quarterly *Bulletin* contains analysis of a broad range of economic and financial issues, including payments system developments from

3 See <https://cfr.gov.au/media-releases/2016/mr-16-02.html>.

time to time, as well as aspects of the Bank's operations. During the year in review, the *Bulletin* included an article discussing sources of financial risk for central counterparties, articles on changes in the use of cash and cheques, and another presenting key findings from the Bank's 2016 Consumer Payments Survey on how Australian consumers make payments.[4]

To supplement the Bank's research and policy work, statistics on retail payments are collected by the Bank on a monthly basis from most financial institutions (banks, building societies, credit unions and card companies) and some other payments system participants. The collected data cover cheques and bulk electronic transfers as well as debit, credit and charge cards, and aggregates are made available on the Bank's website each month. The Bank has recently completed a review of the content of this collection, and is in the process of implementing changes which will reduce overall industry reporting burden and enhance the relevance of the data collected.

Online communication

The Bank publishes information in both electronic and hardcopy formats, though most access to information is online. The Bank's website contains a wide range of information relating to the Bank's payments system policy. The material on payments and financial market infrastructures (FMIs) attracted over 850 000 page views in 2016/17.

Liaison Activity

The Bank engages with a wide range of stakeholders in Australia and overseas.

Liaison with industry

The Bank engaged extensively with industry in 2016/17. In August 2016, the Board held its annual meeting with members of the Australian Payments Council, which included discussion of the Council's Australian Payments Plan.[5] Engagement between the Board and the Australian Payments Council occurs pursuant to a memorandum of understanding between the two organisations signed in 2015 and published on the Bank's website.

In the retail payments area, Bank staff met with a range of stakeholders to discuss policy concerns relating to dual-network debit cards and mobile wallet technology, including as part of a public consultation that the Bank held on this issue. Following the conclusion of the Bank's *Review of Card Payments Regulation* in May 2016, the staff also engaged closely with schemes and financial institutions around the implementation of the new standards. This included discussions with acquirers about the content of merchant statement information to be provided to merchants. Another focus area of the Bank's industry liaison during 2016/17 has been payments technology and innovation, especially in relation to digital currencies, the use of distributed ledger technology and payments-related financial technology (fintech) activity more broadly.

Bank staff meet regularly with senior staff of the Australian Payments Network (AusPayNet, formerly the Australian Payments Clearing Association) to discuss industry developments. These meetings take place consistent with an agreement on liaison arrangements between the two organisations that was updated in 2016/17 and is published on the Bank's website. The staff also meet periodically with

4 A staff Research Discussion Paper on the 2016 Consumer Payments Survey was also published in July 2017. See Box A.

5 The Australian Payments Council is an industry body, consisting of senior executives drawn from financial institutions (including the Reserve Bank) and other payments organisations.

counterparts from the Australian Competition and Consumer Commission (ACCC) and the Australian Treasury. The Bank and the ACCC have continued to collaborate closely in relation to the new surcharging framework, including ensuring that information provided to businesses and consumers is clear and consistent. Over the past year, Bank staff have participated in the Government's Black Economy Task Force, which has included some payments issues in its deliberations and draft recommendations.

The Bank remains extensively involved with the development of the New Payments Platform (NPP), (see 'Box B: New Payments Platform'). The Heads of Payments Settlements and Payments Policy Departments attend meetings of the NPP Australia Board – one as a voting member and the other as an observer. Alongside other participating financial institutions, Bank staff have continued to make a substantial contribution to the various design authorities, working groups and subcommittees responsible for developing and delivering the NPP.

As described in other chapters of this report, the Bank continued to work closely with other agencies of the CFR on a number of policy issues, including work in relation to FMI resolution and competition in clearing and settlement of equities. The CFR agencies, along with the Australian Transaction Reports and Analysis Centre (AUSTRAC), also participated in a working group considering the implications of distributed ledger technology for the financial system and regulation.

Staff also attended, in some cases as speakers or panellists, various conferences and seminars on payments and market infrastructure-related issues.

Payments Consultation Group

The Bank established the Payments Consultation Group in December 2014, with the aim of providing a more structured mechanism for users of the payments system (consumers, merchants, businesses and government agencies) to express their views on payments system issues as an input to the payments policy formulation process. The Payments Consultation Group helps to ensure that the Board is well informed of end-user needs and views, as input to its interactions with the Australian Payments Council and its other policy work.

The Payments Consultation Group meets approximately every six months. It met three times in 2016/17 and discussed a range of topics including the NPP, mobile wallets, distributed ledger technology, trends in payments identified in the Bank's Consumer Payments Survey and open banking initiatives. The Board appreciates the valuable feedback provided by the participants and their willingness to engage in this process.

International engagement

The Bank is a member of the Committee on Payments and Market Infrastructures (CPMI), which is hosted by the Bank for International Settlements and serves as a forum for central banks to monitor and analyse developments in payment, clearing and settlement infrastructures and sets standards for them. Joint working groups of the CPMI and the International Organization of Securities Commissions (IOSCO) bring together members of these two bodies to coordinate policy work on the regulation and oversight of FMIs.

Senior staff members from Payments Policy Department attend CPMI meetings, and contributed to CPMI reports on faster retail payments and on the use of distributed ledger technology in payment, clearing and settlement systems. Senior staff members from Payments Policy Department are also members of the CPMI–IOSCO Steering Group, CPMI–IOSCO Implementation Monitoring Standing Group, and CPMI–IOSCO Policy Standing Group. An officer in Payments Policy Department is also contributing to the work on enhancing resolution arrangements for central counterparties, which is being led by a working group under the Financial Stability Board Resolution Steering Group. For more details on the Bank's involvement in recent international work on FMIs, see the Policy Development section in the chapter on 'Oversight, Supervision and Regulation of Financial Market Infrastructures'.

The Bank is also a member of the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) Working Group on Payment and Settlement Systems (WGPSS). This group has focused on several issues over the past year, including the application of new technologies such as distributed ledger technology to payment and settlement systems; central bank initiatives to support fintech development; the development of fast retail payment systems; and cyber resilience and oversight of FMIs. The Bank is participating in a study group of the WGPSS that is examining the development of payments-related fintech in the EMEAP region and the implications for central banks.

Regulator Performance Framework

The Bank adheres to the Australian Government's Regulator Performance Framework, which was established in 2014 as part of the government's commitment to reducing the cost of unnecessary or inefficient regulation imposed on individuals, businesses and community organisations. The framework consists of six outcomes-based key performance indicators (KPIs) that articulate the government's expectations of regulator performance.

The Bank's second annual self-assessment of its performance against these KPIs is underway. Self-assessments are conducted in close consultation with the regulated industry. In the Bank's case, the metrics used were determined with input from the entities regulated by the Bank, namely the designated card schemes and licensed clearing and settlement (CS) facilities. Each year the regulated entities are asked to respond to a survey that seeks feedback on these metrics.

The Bank appreciates the feedback that has been provided by card schemes and CS facilities in the 2017 survey and will consider how best to respond as it finalises its self-assessment under the framework. Regulated entities will also be given the opportunity to provide feedback on the Bank's draft self-assessment before it is finalised. The self-assessment will then be provided to the minister and published by the end of 2017.

Trends in Payments, Clearing and Settlement Systems

The Payments System Board monitors trends in retail payments, and activity and risk exposures across financial market infrastructure (high-value payment systems, securities settlement systems and central counterparties), consistent with its responsibilities to promote efficiency and competition, and control risk, in the Australian payments system.

Retail Payments

Cash payments

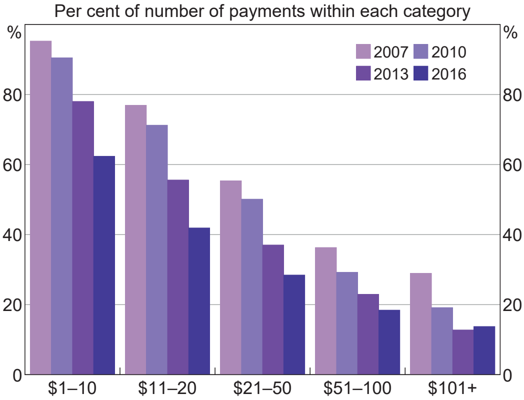
The use of cash has continued to decline relative to other payment methods as consumers shift to electronic payment methods, including for low-value payments. Despite this, cash still accounts for a material share of consumer payments, particularly small transactions, and is used intensively by some segments of the community. Although the transactional use of cash is declining, the demand for cash more generally has continued to grow; cash is widely used as a store of wealth, often for precautionary purposes.[6] The value of banknotes in circulation increased by 5 per cent in 2016/17, slightly below its long-term trend growth rate of 6 per cent; at the end of June there were 1.5 billion banknotes worth $73.6 billion in circulation.

In 2016, the Reserve Bank conducted its fourth triennial Consumer Payments Survey (CPS), which provides comprehensive information on the day-to-day use of cash and other payment methods in the Australian economy (see 'Box A: 2016 Consumer Payments Survey'). The share of consumer payments made in cash reported in the CPS fell to 37 per cent of the number of payments in 2016, from around 70 per cent in the 2007 survey. The latest survey indicated that credit and debit cards combined overtook cash as the payment method most frequently used by Australian consumers. However, when measured by the value of payments, the relative use of cash was broadly unchanged compared to the 2013 survey, at around 18 per cent. Between the 2013 and 2016 surveys, the decline in the use of cash relative to other payment methods was largely due to consumers using cards more frequently for in-person payments, with contactless 'tap and go' cards increasingly being used instead of cash for lower-value payments. Nonetheless, cash still accounted for over 60 per cent of payments under $10 in 2016 (Graph 1).

As transactional use of cash has declined, people are carrying less cash in their wallets and making fewer ATM withdrawals. In the 2016 CPS, around one-fifth of respondents said they did not hold any cash at the beginning of the survey week (compared with 8 per cent in the 2013 survey). Data reported to the Bank by financial

6 For more information, see: Davies C, M-A Doyle, C Fisher and S Nightingale (2016), 'The Future of Cash', RBA *Bulletin*, December, pp 43–52 and Doyle M-A, C Fisher, E Tellez and A Yadav (2017), 'How Australians Pay: Evidence from the 2016 Consumer Payments Survey', Research Discussion Paper 2017-04.

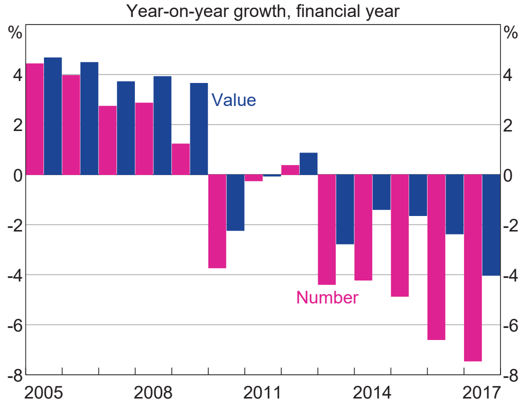
Graph 1
Cash Payments by Size
Per cent of number of payments within each category



Source: RBA calculations, based on data from Colmar Brunton, Ipsos and Roy Morgan Research

institutions indicate that the number and value of ATM withdrawals declined by 7 per cent and 4 per cent, respectively, in 2016/17, faster rates of decline than in the previous few years (Graph 2). The average value of ATM withdrawals has

Graph 2
ATM Withdrawals
Year-on-year growth, financial year



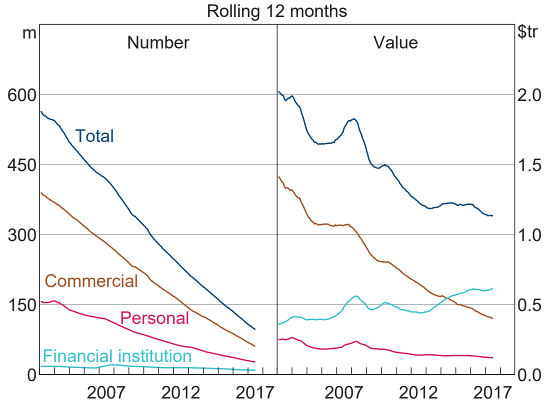
Source: RBA

steadily increased from around $180 in mid 2012 to around $215, possibly because cardholders are economising on their use of ATMs in order to avoid direct charges. The rate of growth of ATM numbers has slowed in recent years, consistent with the decline in ATM use and associated pressures to rationalise networks; according to the Australian Payments Network (AusPayNet), there were around 32 000 ATMs in Australia at the end of March. The number of cash-outs at the point of sale has also been declining since 2012/13.

Cheque payments

The decline in cheque use has continued, with the total number of cheque payments falling by around 20 per cent in 2016/17 (Graph 3). The number of cheque payments in Australia has declined by around 85 per cent over the past two decades. Cheques currently account for only around 1 per cent of the number of non-cash payments and around 7 per cent by value, with cheques most often used for relatively large transactions. The decline in cheque use has been influenced by changing consumer preferences and technological innovations. With developments such as the New Payments Platform (see 'Box B: New Payments Platform'), e-conveyancing for property-related transactions, and increasing use of electronic payments, the shift away from cheques is likely to continue. As this occurs, the per transaction costs of supporting the cheque system will continue to rise. The Australian Payments Council is considering options for managing the decline in the cheque system as part of its Australian Payments Plan.

Graph 3
Cheque Payments
Rolling 12 months



Source: RBA

Box A

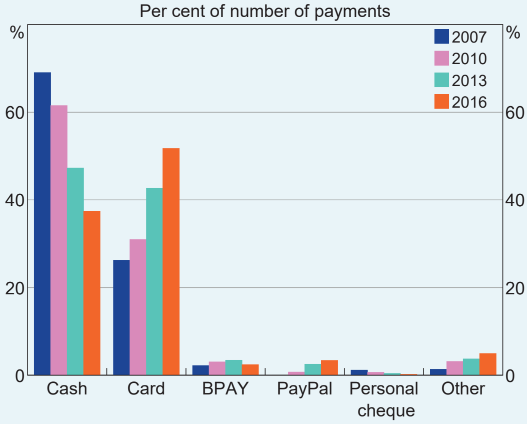
2016 Consumer Payments Survey

In November 2016, the Reserve Bank undertook its fourth triennial Consumer Payments Survey (CPS).[1] The survey provided a detailed snapshot of Australian consumers' payment behaviour. In 2016, over 1 500 people recorded details of every consumer payment they made over a week. The CPS showed a continuation of the trend towards the use of electronic payment methods in preference to paper-based methods such as cash and cheques. In 2016, credit and debit cards combined were the most frequently used method of payment by Australian consumers, accounting for just over half of the number of transactions (Graph A1). The data suggest that overall, Australian consumers made around 690 payments per person in the 2016/17 financial year.

The increase in the use of cards relative to other payment methods since the 2013 CPS has been facilitated by the widespread adoption of contactless 'tap and go' functionality by consumers and merchants at the point of sale. Around one-third of all point-of-sale transactions were conducted using 'tap and go' functionality in 2016, which is more than triple the share reported by participants in the 2013 survey. In particular, contactless cards are increasingly being used instead of cash for low-value payments. The ability to make contactless payments using a mobile phone rather than a physical (plastic) card is a relatively new feature of the payments system and this technology was not widely used at the time of the 2016 CPS. Consumers did, however, use smartphones for a higher share of their online payments.

1 Doyle M-A, C Fisher, E Tellez and A Yadav (2017), 'How Australians Pay: New Survey Evidence', RBA *Bulletin*, March, pp 59–65 and Doyle M-A, C Fisher, E Tellez and A Yadav (2017), 'How Australians Pay: Evidence from the 2016 Consumer Payments Survey', RBA Research Discussion Paper, No 2017-04.

Graph A1
Consumer Payments
Per cent of number of payments



Source: RBA calculations, based on data from Colmar Brunton, Ipsos and Roy Morgan Research

Although a decline in the use of cash for payments was observed across different demographic groups and merchants, cash remains the most common payment method for certain types of transactions, and is used intensively by some segments of the community. For instance, many older Australians continue to use cash for a significant share of their payments, and cash remains the most commonly used payment method at small food retailers such as cafes, restaurants and bars. Around 12 per cent of respondents made all of their point-of-sale payments using cash in 2016, a similar share as in the 2013 survey.

The use of personal cheques continued to decline, consistent with the aggregate data on cheque use reported earlier. Cheques accounted for 0.2 per cent of the number of consumer payments made by participants in the 2016 CPS, compared with 0.4 per cent in 2013. According to the survey, cheque use remains concentrated among older Australians, though fewer cheques are being written by consumers of all ages.

Box B

New Payments Platform

In 2012, the Payments System Board concluded a strategic review of innovation in the Australian payments system. The review identified a number of gaps in Australia's retail payment system and called on the industry to determine the best way of addressing these gaps. In response, a consortium of 13 Australian financial institutions, including the Reserve Bank, committed to build the New Payments Platform (NPP). The NPP is a fast payments system that will enable close-to-immediate funds availability to payment recipients on a 24/7 basis, even where the payer and payee bank with different financial institutions. The NPP will enable more information to be attached to a payment – instead of the 18 characters currently available, users will be able to send up to 280 characters, providing richer and more useful remittance information. It will also facilitate easier addressing of payments using the 'PayID' service; instead of having to use a BSB and account number, payers will be able to direct their payments to a more easily remembered mobile phone number or email address that a payee will have the option of linking to their account. When it is fully operational, it is expected that all financial institutions will be connected to the NPP, either directly or indirectly, and the vast majority of accounts will be able to send and receive NPP payments.

Payments made through the NPP will be settled individually in real time using a new settlement service built by the Reserve Bank, the Fast Settlement Service (FSS). The central NPP infrastructure is being built under contract by SWIFT but will be run as an industry utility by NPP Australia Limited, which is owned by the 13 financial institutions that funded the development of the NPP.[1] Customers will access the NPP through commercial services offered by their financial institutions. The first such 'overlay' service is being developed by BPAY. Known as 'Osko', it will offer customers the ability to send payments from their bank account to another with close to real-time funds availability, via an online or mobile phone application provided by their financial institution. Over time, it is envisaged that a range of other payment services, developed by different players, will connect to the NPP to offer a variety of payment options tailored to particular contexts and addressing a range of customer needs. The layered architecture of the NPP was designed to facilitate innovation in overlay services from a wide range of participants.

The NPP will be a significant improvement to Australia's payments system infrastructure. Its development has been a substantial, multi-year undertaking by the industry. Development has progressed well, despite the size and complexity of the project. The project is now into the final testing phases and initial functionality is expected to commence operations around the end of 2017 with additional services to be rolled out in 2018 and beyond. The Bank completed its development of the FSS in 2016/17, on time and within budget, and it is now operating in test mode as part of the broader industry testing of the NPP infrastructure.

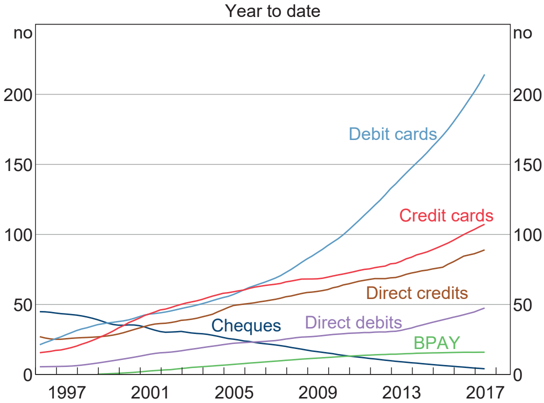
1 SWIFT is a global, member-owned cooperative that provides a communications platform and other services to process payments and exchange information. It is used by many payment systems, other financial market infrastructures and numerous other entities in the financial system.

As noted, the Bank has played a number of roles in the development of the NPP and will continue to do so when it is operational. Having encouraged the development of the NPP as an industry response to its Strategic Review of Innovation, the Payments System Board will have an ongoing policy role to play in overseeing the operation of the NPP and ensuring that it meets the objectives that were set for it.

Electronic payments

The use of electronic payment methods continues to increase (Graph 4). On average, Australians made around 470 electronic transactions per person in 2016/17, up from around 430 transactions per person in the previous year. Direct Entry payments account for the bulk of electronic payments by value, while card payments make up around two-thirds of the number (Table 2).

Graph 4
Non-cash Payments per Capita
Year to date



Sources: ABS; AusPayNet; BPAY; RBA

Debit and credit card payments

Debit and credit cards combined are the most frequently used payment method. In 2016/17, Australian personal and business cardholders made around 7.8 billion card payments worth $571 billion, increases of around 13 per cent and 6 per cent, respectively from the previous year. While the number and value of card payments continue to grow, the average value of these transactions has fallen somewhat over time, reflecting the increased use of cards for low-value payments. This trend is consistent with both changing consumer preferences and a greater willingness of merchants to accept cards for low-value transactions.

Growth in the number and value of debit card transactions continues to outpace growth in credit card transactions (Table 2). The majority of debit card payments are now made through the international (MasterCard or Visa) debit schemes, while eftpos' share of transactions has been steadily declining. This predominantly reflects the shift to contactless transactions with eftpos not offering contactless functionality until relatively recently.

The past year has seen significant rollout of mobile payments technology that enables mobile devices, such as smartphones, to be used to make contactless payments using an electronic representation of a debit or credit card, as opposed to a traditional plastic card. A number of financial institutions are now offering this functionality, some through third-party mobile wallets, such as Apple Pay and Android Pay, and others by integrating it into their own mobile banking applications (see the chapter on 'Retail Payments Regulation and Policy Issues'). Though mobile payments still account for a very small share of all payments, a little over 10 per cent of respondents to the 2016 CPS said they had made a mobile payment before, or were interested in making them; this share was a little higher for those respondents aged under 30 (15 per cent).

Table 2: Non-cash Payments

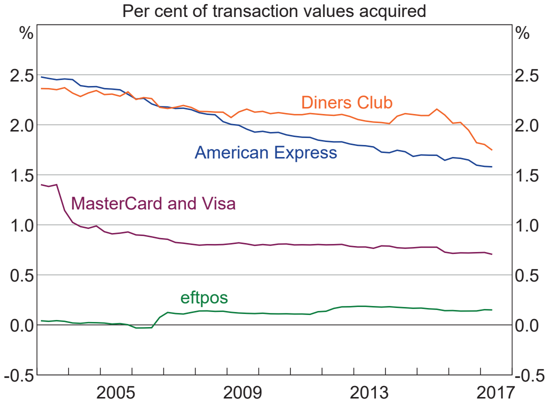
	2016/17					Average annual growth 2011/12–2016/17	
	Per cent of total		Average value	Growth (per cent)		Per cent	
	Number	Value	$	Number	Value	Number	Value
Debit cards	44.7	1.5	50	14.3	9.1	13.2	9.9
Credit cards	22.4	1.8	120	9.1	4.1	8.7	4.8
Direct credits	18.7	51.9	4 045	6.9	5.4	7.1	4.9
Direct debits	10.0	35.7	5 226	13.0	3.4	11.1	0.5
BPAY	3.3	2.2	980	1.9	8.1	3.9	9.7
Cheques	0.9	6.8	11 490	–21.0	–4.2	–16.1	–1.6
Total	**100.0**	**100.0**	**1 460**	**10.7**	**4.1**	**9.7**	**2.8**

Sources: BPAY; RBA

Merchant fees for international scheme cards have declined steadily since the early 2000s (Graph 5). The average fee paid by merchants to their financial institution for transactions on MasterCard and Visa credit and debit cards was broadly unchanged over 2016/17 at around 0.7 per cent of the transaction value. This follows a decline over the previous financial year, coinciding with the reset in interchange fees in November 2015. The average fee for American Express transactions declined by 8 basis points in 2016/17 to 1.58 per cent, while there was a relatively large fall of 28 basis points in the average fee for Diners Club transactions, to 1.75 per cent.

The average merchant service fee for eftpos transactions increased by 1 cent in 2016/17 to be around 10 cents per transaction. This corresponds to a rate of 0.15 per cent for the average eftpos transaction, which remains well below the rate for transactions over the international schemes' debit networks. However, as eftpos fees are generally charged as a flat amount per transaction, for some low-value transactions, these fees can be higher than the ad valorem rates applying to transactions over the international schemes.

Graph 5
Merchant Service Fees
Per cent of transaction values acquired



Source: RBA

The level of merchant fees is heavily influenced by wholesale interchange fees paid from merchants' banks to cardholders' banks. Interchange fees also influence the level of cardholder fees and benefits, for instance in the form of rewards. The Bank's new interchange fee standards came into effect on 1 July 2017 after being announced as part of a package of reforms in May 2016. The reforms also included changes aimed at improving the transparency of payment costs to merchants and preventing excessive surcharges by merchants (see the chapter on 'Retail Payments Regulation and Policy Issues' for more details).

Direct Entry and BPAY payments

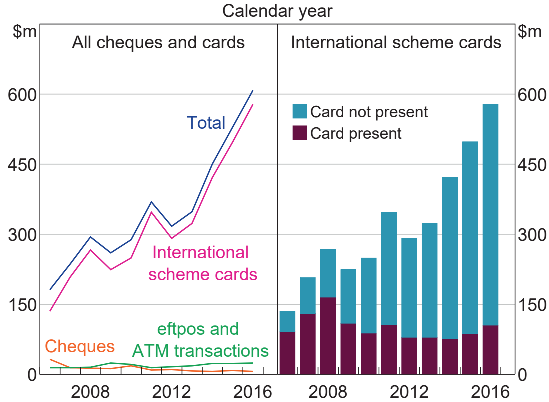
Direct Entry payments account for the bulk of the value of non-cash retail payments. The high average value of these payments reflects their use by businesses, corporations and governments for a range of bulk payments, for example, salary and welfare payments. According to the 2016 CPS, Direct Entry payments are increasingly used for person-to-person transfers. Direct debit arrangements are also used extensively by consumers and businesses to make recurring payments.

In 2016/17, the number and value of BPAY transactions increased by 2 per cent and 8 per cent, respectively. Consumers and businesses use BPAY to make a range of bill payments, including for utilities, education fees and investments. BPAY payments are much less common than card payments, but the high average value of these payments means they account for a greater share of the value of electronic retail payments than credit and charge cards.

Payments fraud

According to data collected by AusPayNet, total losses from fraudulent cheque and debit, credit and charge card transactions (where the card was issued and/or acquired in Australia) increased by 15 per cent to $608 million in 2016 (Graph 6). The estimated fraud rate (the value of fraudulent transactions as a share of overall transactions) increased to 32 cents per $1 000 transacted, from 27 cents in 2015. As was the case for the past few years, the overall increase in fraud was principally driven by an increase in fraud on debit, credit and charge cards issued by international schemes, which rose by 16 per cent to $578 million in 2016.[7] Losses relating to fraudulent eftpos and ATM transactions rose by $1 million to $24 million

Graph 6
Fraud Losses on Cheque and Card Transactions

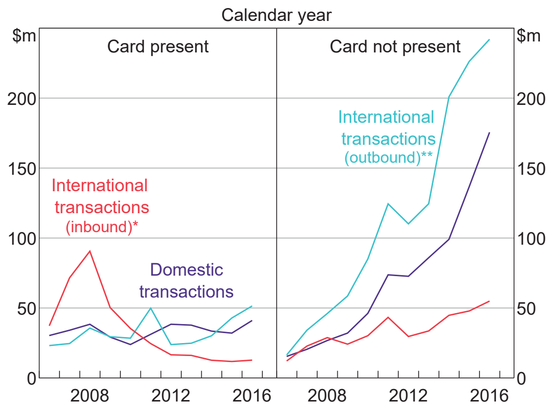


Sources: AusPayNet; RBA

in 2016, while cheque fraud fell by $2 million to $6 million.

Fraud losses continue to be driven by the fraudulent use of international scheme cards in the card-not-present (CNP) environment (i.e. online, via telephone or mail); this kind of fraud rose by 15 per cent in 2016 to $473 million. CNP fraud perpetrated overseas on Australian cards accounted for 42 per cent of all fraud on international scheme cards in 2016 (Graph 7).

Graph 7
Scheme Fraud Losses



* Fraud perpetrated in Australia on cards issued overseas
** Fraud perpetrated overseas on cards issued in Australia
Sources: AusPayNet; RBA

7 Fraud statistics for 'international scheme' debit, credit and charge cards relate to transactions through the MasterCard, Visa, American Express and Diners Club schemes.

The fraud rate for CNP transactions is estimated to be around 8 times the rate for card-present transactions. The industry has recently been considering initiatives to address the steep rise in CNP fraud, particularly online card fraud. Key measures include the implementation of stronger risk-based customer authentication and fraud detection systems and the development of fraud prevention education programs aimed at small online merchants. The development of a trusted digital identity framework in Australia, which is currently under discussion, could also help combat CNP fraud, together with the use of emerging technologies such as biometrics for customer authentication and transaction tokenisation to provide greater security to card details.

Card-present fraud losses for domestic scheme transactions rose by $9 million in 2016, largely due to an increase in lost/stolen card fraud and an increase in card skimming. Despite this increase in fraud losses, the rate of card-present fraud has declined over the past few years since the introduction of chip and PIN technology.

Reflecting the increase in CNP fraud, the overall fraud rate across all cards increased from 74 cents to 82 cents per $1 000 transacted in 2016. While this fraud rate is close to that recorded in the United Kingdom, it is high compared with most other European countries, many of which have rates of card fraud that are less than half of that observed in Australia.

The Board has previously taken the view that measures to address fraud are principally a matter for industry, given the incentives that participants have to reduce fraud rates. However, a level of coordination in efforts to reduce fraud can be desirable, and barriers to effective coordination can arise. Accordingly, and reflecting the continuing rise in fraud rates, the Bank will be considering whether there are any actions that it may be able to take to facilitate or encourage industry efforts to address growing CNP fraud rates.

High-value payment and settlement systems

In Australia, the final settlement of Australian dollar (AUD) interbank obligations occurs across exchange settlement accounts through the Reserve Bank Information and Transfer System (RITS). RITS facilitates settlement of payments on a real-time gross settlement (RTGS) basis. Foreign exchange transactions involving the AUD are generally settled through CLS Bank International (CLS), with AUD funding paid to CLS through RITS. Together these two systems settle the majority of payments in Australia by value. RITS also facilitates the interbank settlement of the payment leg of securities transactions. Securities settlement involves delivery of the security in exchange for payment, typically through a securities settlement facility (SSF).

Reserve Bank Information and Transfer System

Over 70 per cent of the value of non-cash payments in Australia is settled on an RTGS basis in RITS (Table 3). RITS also settles time-critical payments to other financial market infrastructures, such as margin payments to central counterparties (CCPs) and debt and equity settlement obligations to SSFs. In 2016/17, the average daily value of RTGS transactions in RITS rose by 5 per cent to $175 billion and the average daily number of transactions increased by 3 per cent to over 46 000. The peak value settled on an RTGS basis on a single day during 2016/17 was $258 billion.

Although RITS is primarily an RTGS system, it also facilitates the multilateral net settlement of interbank obligations arising from other systems. These include non-cash retail payments – such as cheques, Direct Entry payments and card transactions – most of which are netted

Table 3: Transactions Settled in RITS
Daily average, 2016/17[(a)]

	Number[(b)]	Value[(b)]	Interbank settlement value in RITS
	'000s	$ billion	$ billion
RITS RTGS	46.4	175.0	169.1
SWIFT payments	43.0	105.1	105.0
Austraclear[(c)]	3.3	57.0	51.3
RITS cash transfers	0.2	12.8	12.8
CLS	53.6	261.2	2.7
Retail payments	46 154.0	67.1	4.3
Direct entry[(d)]	14 709.9	60.2	
Cheques	395.0	4.5	
Credit/charge cards[(e)]	10 357.2	1.3	
Debit cards	20 692.0	1.1	
Equity settlements (CHESS)[(f)]	1 053.1	9.6	0.5
Property settlements (PEXA)[(g)]	–	–	0.1

(a) Business days
(b) Includes payments between customers of the same financial institution
(c) Primarily debt securities transactions; includes cash-only transactions; excludes intraday repurchase agreements
(d) Includes BPAY
(e) Includes MasterCard obligations which are not settled through LVSS
(f) Gross value of equity trades settled in CHESS, ASX's clearing and settlement system for cash equity trades
(g) Net value of property settlement batches; each property settlement batch may involve a number of payments
Sources: ASX; CLS; RBA

through the RITS Low Value Settlement Service (LVSS). Direct entry makes up the majority of the value of retail payments through RITS. RITS also accepts transactions which are netted outside RITS: cash equity transactions through CHESS, ASX Settlement Pty Limited's (ASX Settlement) equities settlement system; Mastercard's AUD domestic obligations; and property settlement transactions, managed by Property Exchange Australia Limited (PEXA).

CLS Bank International

CLS is an international payment system that links the settlement of the two legs of a foreign exchange transaction. By operating such a payment-versus-payment settlement mechanism, CLS allows participants to mitigate foreign exchange settlement risk, i.e. the risk that one counterparty to a transaction settles its obligation in one currency, but the other counterparty does not settle its obligation in the other currency. CLS currently settles 18 currencies. The daily average value of AUD settlements at CLS increased by around 1.5 per cent in 2016/17.

Securities settlement facilities

In Australia, ASX Settlement Pty Limited (ASX Settlement) provides SSF services for ASX-quoted cash equities, debt products and warrants traded on the ASX and Chi-X Australia Pty Ltd (Chi-X) markets. ASX Settlement also provides SSF services for non-ASX listed securities quoted on the IR Plus Securities Exchange Limited, the National Stock Exchange of Australia, and the Sydney Stock Exchange Limited. The average daily value of cash equity settlements through

ASX Settlement increased by 6 per cent in 2016/17 to $9.6 billion.

Austraclear Limited (Austraclear) provides SSF services for trades in debt securities, including government bonds and repurchase agreements. In 2016/17, the average daily value of debt securities settled in Austraclear increased by 4 per cent.

Central counterparties

CCPs play a major role managing the risks associated with trading in financial instruments. CCPs stand between the counterparties to a financial trade, acting as the buyer to every seller and seller to every buyer. Participants in cleared markets have credit and liquidity exposures only to the CCP, rather than other participants in the market.

In the absence of a participant default, the CCP is not exposed to market risk as it stands between counterparties with opposite (i.e. offsetting) positions. However, in the event that a participant defaults, the CCP must continue to meet its obligations to its surviving participants. In such an event, the CCP faces potential losses from changes in the value of a defaulting participant's portfolio until it closes out the positions in that portfolio.

To mitigate the risk of such losses, CCPs maintain prefunded resources, typically in the form of initial margin and default funds. Initial margin, which is collected from participants, is sized to cover potential future losses on a participant's portfolio in the event they default, to a specified confidence interval. As such, initial margin provides a risk-based measure of the magnitude of exposures faced by CCPs. Default funds (comprising contributions from participants and/or the CCP itself) are available to cover losses if, in the event of default, the defaulting participant's margin is exhausted.[8]

Four CCPs are licensed to provide services in Australia:

- ASX Clear Pty Limited (ASX Clear) provides CCP services for ASX-quoted cash equities, debt products and warrants traded on the ASX and Chi-X markets, equity-related derivatives traded on the ASX market and Chi-X quoted warrants traded on Chi-X
- ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) provides CCP services for futures and options on interest rate, equity, energy and commodity products traded on the ASX 24 market, as well as AUD-denominated over-the-counter (OTC) interest rate derivatives (IRD)
- LCH Limited's (LCH Ltd) SwapClear service provides CCP services for OTC IRD[9]
- Chicago Mercantile Exchange Inc. (CME) is licensed to provide CCP services for OTC IRD, and non-AUD IRD traded on the CME market or the Chicago Board of Trade market for which CME permits portfolio margining with OTC IRD.

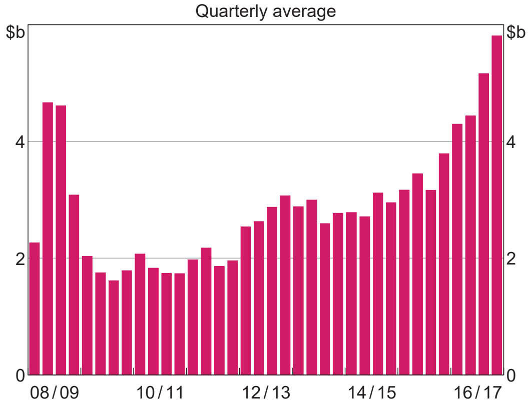
Exchange-traded products

As noted above, the ASX CCPs clear exchange-traded futures and options, as well as cash equities. Exposures at ASX Clear (Futures) grew strongly over 2016/17 to $5.9 billion as measured by margin held (Graph 8). These exposures primarily arise from the four major contracts on the ASX 24 market – the SPI 200 equity index future, the 3-year and 10-year Treasury bond

8 CCPs also call variation margin to cover the exposure to actual changes in market prices, to prevent the build-up of current exposures. It is collected from participants with mark-to-market losses, and typically paid out to participants with gains.

9 Until June LCH Ltd was also authorised to provide CCP services for the FEX market, which is not yet operational.

Graph 8
ASX Clear (Futures) Initial Margin*
Quarterly average

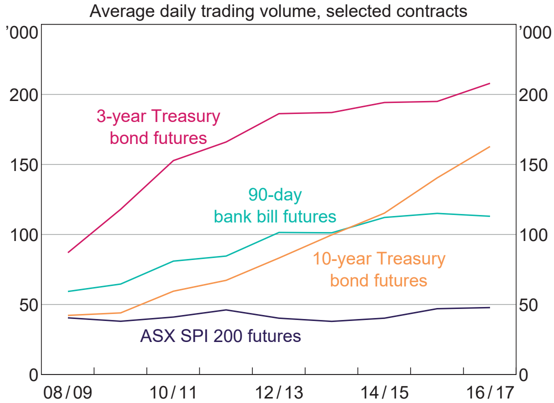


* Includes margin collected for both exchange-traded derivatives and OTC interest rate derivatives

Source: ASX

futures and the 90-day bank bill swap future – which together accounted for around 96 per cent of the total volume of transactions cleared in 2016/17. The increase in ASX Clear (Futures)' exposures in recent years is due in large part to strong growth in transactions in the 10-year Treasury bond futures (Graph 9). But it also partly reflects increased margin rates in response to the United Kingdom referendum on European Union membership in June 2016, these rates were gradually reduced towards the end of 2016.

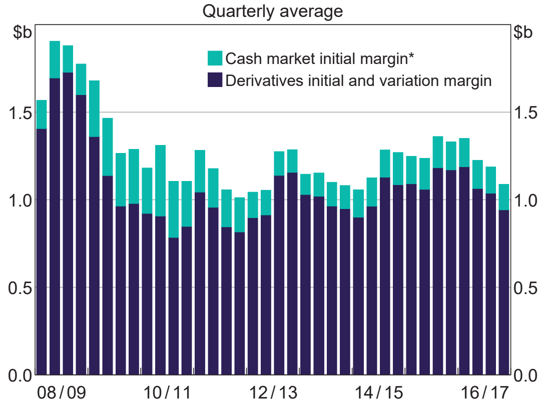
Graph 9
ASX 24 Derivatives Trades
Average daily trading volume, selected contracts



Sources: ASX; Bloomberg

ASX Clear's exposures, as measured by margin, declined by 6 per cent in 2016/17 (Graph 10). Trading activity in derivatives on the ASX market has increased slightly, following a number of years of contraction (Graph 11). The bulk of ASX Clear's exposures relate to these derivatives, primarily due to the longer duration of these contracts relative to the two-day exposures of cash equities trades. The average daily number and value of cash equities trades rose in 2016/17.

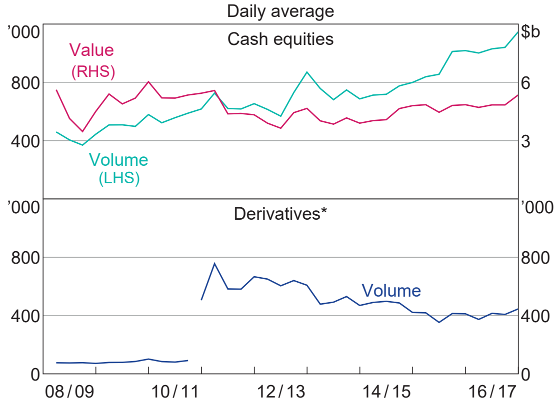
Graph 10
ASX Clear Margin
Quarterly average



* Notional amount until 7 June 2013; methodology used to calculate initial margin changed on 18 July 2012

Source: ASX

Graph 11
ASX Market Trades
Daily average



* In May 2011, ASX changed its standard contract size for single stock options to 100 shares per contract from 1 000 shares per contract

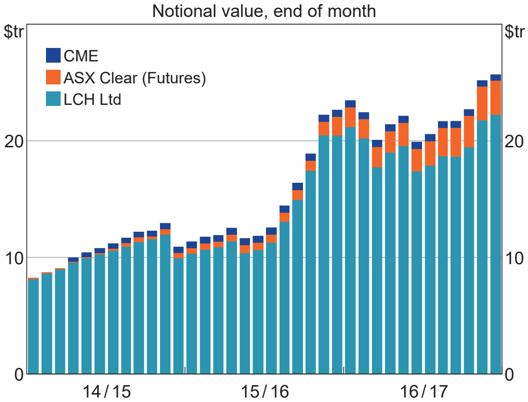
Source: ASX

Over-the-counter interest rate derivatives

OTC IRD are traded directly between counterparties, rather than on an exchange. In recent years the proportion of OTC IRD that are centrally cleared has increased globally. This is in part due to the G20's OTC derivatives reforms, which included the objective of central clearing of standardised OTC derivatives. Consistent with this, mandatory central clearing of OTC IRD (denominated in AUD and major currencies) between internationally active dealers came into effect in Australia in April 2016.

The notional value of centrally cleared AUD-denominated OTC IRD outstanding rose quickly in the first half of 2016 (Graph 12). While this in part reflected the effects of the introduction of mandatory clearing, this increase was also driven by LCH Ltd's introduction of clearing of AUD-denominated overnight index swaps through SwapClear. As at June 2017, 87 per cent of centrally cleared AUD OTC IRD were cleared at LCH Ltd, with most of the remaining share cleared at ASX Clear (Futures).

Graph 12
Outstanding AUD-denominated OTC Interest Rate Derivatives*
Notional value, end of month



* Data count two sides of each trade
Sources: ASX; CME Inc.; LCH Ltd

LCH Ltd and CME provide clearing services for OTC IRD in a range of currencies. AUD-denominated contracts make up a small share of outstanding contracts in all currencies – around 6 per cent at LCH Ltd's SwapClear service and 1 per cent at CME. Australian participation in SwapClear was steady over 2016/17, with five Australian-incorporated entities participating as direct clearing members. CME had no Australian direct clearing participants as at June 2017, though a number of Australian-based banks, superannuation funds and other institutional investors clear products at CME indirectly as clients.

Strategic Priorities for the Reserve Bank's Payments Work

At its November 2016 meeting, the Payments System Board endorsed a set of strategic priorities to guide the Reserve Bank's payments policy work. These priorities reflect the Bank's assessment of trends and developments in the retail payments and financial market infrastructure (FMI) areas that could have the most significant implications for competition, efficiency and risk over the next few years. The Bank's medium-term payments and FMI work agendas are focused on these strategic priorities. The Board will periodically review the strategic priorities as the payments and FMI landscape evolves. The following areas, some of them interrelated, are the strategic priorities for the Bank's payments work over the coming few years.

Technology and Innovation

The payments, clearing and settlement industries are going through a period of unusually rapid innovation and technology evolution that could have significant implications for the Bank's oversight and regulation work, and also potentially for the way the Bank operates. In the case of retail payments, the deployment of contactless functionality in recent years has supported innovation in how users interface with payment systems, including the development of mobile wallets and other form factors (such as wearables) to make payments. The rapid expansion of the 'internet of things', where everyday objects are connected to the internet, is encouraging the development of other payment interfaces, while the confluence of always-on connectivity, smartphone innovation and big data is driving the development of integrated and embedded payments that provide more streamlined and automated payment processes.

In addition, the large volume of data that is now generated by everyday electronic transactions creates opportunities for new platforms that help consumers to use this data to make more informed decisions.

Clearing and settlement facilities, and other types of infrastructure supporting financial markets, are similarly operating in an environment where technology is rapidly evolving. Distributed ledger technology (DLT), in particular, has attracted considerable attention in the finance industry as a potentially transformative technology. A large number of financial institutions in Australia are working on DLT-based applications, including in settlement systems and international payments.

Given this environment of rapid technology innovation, the Bank will continue to actively engage with innovations most relevant to its responsibilities to improve its understanding of new technologies and their implications for competition, efficiency and stability in payment systems and FMIs. This will require frequent liaison and possibly collaboration with innovators and other industry stakeholders, as well as user groups affected by new technologies. Working closely with other regulators and the Treasury, the Bank will seek to identify any changes to the legal and regulatory framework that might be required to accommodate new technologies, and will look to ensure that the environment remains conducive to competition and that any new risks that technologies introduce are appropriately managed.

The Bank will also seek to address any industry coordination challenges that may hamper the adoption of new technologies that improve the safety and efficiency of the payments system. This is the approach the Bank took following its 2012 *Strategic Review of Innovation in the Australian Payments System*, where the Board set out high-level strategic objectives for the industry to meet and encouraged the formation of the Australian Payments Council as an industry governance body that would take a strategic view and deal with the coordination challenges that had previously hampered innovation. The New Payments Platform (NPP), currently under development, was the industry's main vehicle for addressing the Board's initial set of strategic objectives (see Box B). At some point after the NPP is operational, it will be appropriate for the Payments System Board to assess how well the strategic objectives have been met and whether there are other areas where cooperative industry solutions may be needed.

Changes to the Payments Mix

As discussed further in the chapter on 'Trends in Payments, Clearing and Settlement Systems', Australia's payments mix is continuing to evolve. The use of cheques and cash for consumer payments has been declining for some time and the use of electronic payment methods has been rising strongly, including through the rapid adoption of contactless functionality for card payments in recent years. Recent innovations such as mobile wallets and the forthcoming operation of the NPP (see below) are expected to encourage a further shift towards electronic payments. Consistent with its mandate, the Bank has a role to play in overseeing the transition towards a more efficient payment system, while also ensuring that the needs of the users of the payments system are adequately met.

Managing changes in the payments mix is also a key focus of the Australian Payments Council, which is currently working with various stakeholders on a roadmap for the transition away from cheques and developing an industry strategy for the shift towards a 'less-cash' society. While it is appropriate that the industry continue to take the lead on these issues, the Bank will continue to monitor developments and contribute to debate through the provision of data and research on changes to the payments mix and the efficiency of Australia's payments system. In 2016/17, for example, the Bank undertook its fourth triennial survey of consumer payments with the results published recently (see Box A).

The Bank has also been examining the role that digital currencies might play in the future payments mix, including digital cash issued by a central bank. While the Bank currently has no plans to develop a digital equivalent of physical cash, it will continue to study the technical and policy issues associated with different models of digital cash, as well as the factors that could determine future demand for this type of instrument.

New Payments Platform

Thirteen industry participants, including the Bank, are committing significant resources to develop the NPP, which is currently expected to commence operations around the end of 2017 (see Box B). The NPP will be a major upgrade to Australia's payments infrastructure, which over time is expected to deliver a range of innovative payment services to households, businesses and government. As the NPP is a large investment for the industry and the Bank, with significant implications for the future of retail and wholesale payment systems, it will continue to be a strategic focus of the Board over the years ahead.

As noted earlier, the Bank was heavily involved in getting the NPP project off the ground; the industry proposal to build the NPP was a direct response to the strategic objectives set by the Board following its 2012 *Strategic Review of Innovation in the Australian Payments System*. Since then, the Bank has been actively participating in the project, including in the design and implementation of the Fast Settlement Service and as one of the 13 institutions that have funded the central build and which will connect to the core infrastructure. Once the NPP is launched, the Board's focus will return to policy issues and ensuring that the arrangements put in place deliver on the intended outcomes. Some of the future policy issues the Bank may need to consider in relation to the NPP include: competition and access, security, fraud and operational resilience. In addition, if growth in transaction volumes and values results in the NPP accounting for a significant share of payments in the economy, the Bank may also need to consider a formal oversight role in line with the Bank's regulatory responsibilities for systemically important payment systems.

Issues Involving New Entrants into the Payments System

The Bank's longstanding approach to regulation in the payments system is shaped by a presumption in favour of self-regulation by the industry, with the Bank only imposing regulation where the industry is unable to address a public interest concern. In practice, this means the Bank has imposed regulation in only a relatively narrow range of payments activities and many elements of the payments system, and the participants within them, remain unregulated by the Bank. However, the rapid pace of innovation and emergence of new players in recent years has increased the focus on the 'regulatory perimeter' and steps that could be taken to improve competition and better facilitate innovation and access by new entrants. There are several aspects of this that will have implications for the Bank's work over the next few years.

One aspect relates to the role of regulatory status as a means of facilitating market access. Some jurisdictions, such as the European Union, have introduced licensing regimes for payments institutions as a way of broadening access to payments systems, particularly for non-traditional players. A licence provides an official status that may make it easier for new entities to participate in payment schemes or conduct other payments business, with regulatory obligations that are tailored to the levels of risk involved in their activities. One possibility is that the Bank, together with other relevant agencies, could consider whether a European-style licensing and supervision framework for payment service providers would make it easier for new participants to compete in the Australian market and what the costs and benefits of such a framework would be.

Improving the ability of consumers to access their personal banking data and securely share it with third-party service providers also has the potential to promote competition and innovation in the payments system. Some jurisdictions, such as the United Kingdom, have imposed obligations on banks to build standardised interfaces that facilitate customers' ability to authorise read and write access to their transaction accounts by third-party service providers. In Australia, the government recently announced plans to implement an 'open banking' regime, with the framework currently being developed. Implementation of effective data sharing arrangements will require significant industry coordination and a number of challenges relating to privacy, data security and fraud will need to be addressed. Given the potential benefits for innovation, competition and efficiency in the payments system, the Bank is strongly supportive and will continue to engage with industry and the government on the development of a data sharing framework.

Operational Risk, Security and Resilience

Against the backdrop of rapid innovation, digitalisation, increasing prevalence and sophistication of cyber crime and increasing centralisation of infrastructure, the security and resilience of payment, clearing and settlement systems is likely to remain a key focus of the Bank's work.

For both retail payments systems and FMIs, operators have strong incentives to manage operational risks. The Bank's oversight of how well these risks are managed varies with the nature of the systems. In the case of FMIs, security and resilience matters have always been a focus of the Bank's oversight and supervision, given these infrastructures have no ready substitutes in the domestic financial system – they are the infrastructure on which much of the functioning of the domestic financial system relies. In contrast, the range of retail payments providers means that there are alternative systems if one system suffers an outage; the Bank's role therefore has mostly been focused on monitoring, collecting and publishing data to provide transparency and awareness around these issues.

Recently there has been increased industry focus on measures to enhance retail payment security and data integrity/protection. In several instances such measures have required cross-industry coordination to be successful – for instance the PIN@POS initiative, which has had a positive impact on fraud rates in card-present environments. As more transactions take place online, however, card-not-present payment fraud has been growing. The Bank will need to consider if there are any actions it can take to help facilitate or encourage industry initiatives to address this issue. The development of digital identity and other authentication systems, which have the potential to make a range of online interactions more convenient and secure, could help reverse the rise in fraud rates on card transactions, and so the Bank will be encouraging the payments industry to work collaboratively in this area.

The Bank may also have a role in supporting cooperative industry initiatives to enhance operational risk management and system resilience. Cyber-related issues will remain a focus for the foreseeable future in the Bank's oversight responsibilities. In the case of FMIs, the Bank's approach to supervision and oversight is closely informed by international guidance developed by the Committee on Payments and Market Infrastructures and the Technical Committee of the International Organization of Securities

Commissions. A key challenge for authorities and industry participants is to understand how the interdependencies between participants in a payments infrastructure ecosystem shape the risks and security of that system. The Board is supportive of cooperative efforts to ensure these interdependencies are not a weakness for infrastructure.

FMI Industry Developments and Policy Initiatives

The Bank continues to monitor the evolution of the domestic and international FMI landscape. As noted above, technological developments could see the emergence of new competitors in payments, clearing and settlement services. Even among existing providers, competitive pressures have been evident over a number of years. For instance, the Bank currently regulates two foreign central counterparties, as well as the ASX Group clearing and settlement facilities, with these three groups directly competing against each other for at least some market segments. The Bank will continue to work with other agencies as needed to understand the policy implications of such technological and market developments.

The Bank has also been undertaking further work with other agencies to develop a statutory framework for FMI resolution in Australia. Since it is currently expected that the Bank will be the resolution authority for FMIs in Australia, the Board will need to consider in detail how the Bank implements this regime once it is in place.

Retail Payments Regulation and Policy Issues

The Reserve Bank implements retail payments policy and undertakes research under its remit to maintain a safe, competitive and efficient payments system. Recent policy work included a public consultation on dual-network cards and mobile wallet technology and a review, in consultation with the Australian Payments Network, of possible options for the future regulation of the ATM system. The Bank has also been closely monitoring the payments market as the Bank's recent reforms to the regulatory framework for card payments come into effect.

Dual-network Cards and Mobile Wallet Technology

During 2016/17, the Bank addressed some policy concerns in relation to dual-network debit cards and mobile wallet technology. A public consultation was held in response to concerns about possible restrictions on the ability of card issuers and mobile wallet providers to enable both networks on dual-network debit cards for use on a mobile device. Following discussion with industry participants through the consultation process, the Bank received commitments from relevant participants that addressed these concerns.

Background

The Board had previously noted the potential benefits of mobile wallet technology to consumers in terms of providing greater choice and convenience in payment methods as well as the potential for competition issues to arise as new and existing players compete in this emerging market. Mobile wallets allow cardholders to make payments using an electronic representation of a payment card in a mobile phone or other device, as opposed to using a plastic card. Cardholders benefit from the convenience of having multiple cards available for use without the need to carry multiple plastic cards in a physical wallet. The mobile wallets are 'apps' provided by either the cardholder's financial institution or a third-party mobile wallet provider (e.g. Apple Pay, Android Pay and Samsung Pay). These apps allow cardholders to make mobile payments using the near-field communication (NFC) functionality of mobile devices to interact with payment terminals.

To date, mobile payments in Australia have only been possible via the networks of international schemes (American Express, MasterCard and Visa). In recent months, eftpos, the domestic debit scheme, has been testing mobile payments functionality with some of its financial institution members and mobile wallet providers.

Dual-network debit cards have traditionally provided convenience similar to the potential offered by mobile wallets in that they offer the capability to pay via two different networks on a single card. These cards typically offer the choice between the domestic debit scheme, eftpos, and one of either MasterCard or Visa. The choice of the particular networks offered on a dual-network debit card could be extended to the digital world with the migration of physical dual-network debit cards to mobile wallets.

In 2016, some stakeholders raised concerns about possible restrictions on competition in the mobile wallet market. In particular, stakeholders noted the potential for scheme restrictions or conduct that may prevent or make it more difficult for both networks on a dual-network debit card to be enabled on a mobile device. This could have the effect of reducing choice and convenience for cardholders in making mobile payments and would reduce the ability of merchants to encourage the use of lower-cost payment methods.

Enabling a network in a mobile wallet

In order for a network on a debit or credit card to be enabled on a mobile device, the card has to be 'loaded' onto the mobile app or wallet through a process of provisioning. A cardholder can initiate this process either through the mobile wallet app or through the mobile banking app provided by the cardholder's financial institution. In a third-party mobile wallet, the process typically involves the cardholder providing the primary account number (PAN) on the card and their name, either by manually inputting the card details or by reading the card using the phone's camera and optical character recognition. In a financial institution's own app, the cardholder's details may be available on file, allowing the app to 'push' the card onto the device.

The provisioning of a card also involves a tokenisation process, which secures the card details by anonymising data. Tokenisation replaces a cardholder's PAN with an alternate cryptographically generated number – a 'token'. Tokens are generated by token service providers (TSPs) and stored on the cardholder's device.

A separate token must be generated for each network that is enabled for a particular card in a mobile wallet. This means that, in order to enable both networks on a dual-network debit card, two tokens would have to be generated – one for each network.

In a mobile payment transaction, it is the token that is passed to the merchant's payment terminal rather than the cardholder's PAN. Consequently, fewer parties in the payment process have access to the cardholder's details, which reduces the scope for data theft or fraud. The token then has to be decrypted by the TSP that generated the token in order for the transaction to be authorised. Each of the various payment schemes have set up their own TSPs in recent years.

Issues for consultation and outcome

The concerns that stakeholders raised about possible competition issues centred on scheme rules relating to provisioning and tokenisation. These rules could potentially restrict issuers, directly or indirectly, from enabling both networks on a dual-network debit card in mobile wallets. In particular, stakeholders raised concerns about:

- scheme rules or policies of a network that might prevent or hinder issuers from provisioning both networks for mobile payments
- contractual terms for tokenisation services that could penalise issuers for provisioning a competitor network for mobile payments, by increasing the price of tokenisation services for issuers that choose to also enable a second network.

In considering these concerns, the Board was guided by its view that competition and efficiency in the payments system are likely to be enhanced where there is a wide range of payment options for consumers and merchants. Mobile wallets represent a technology that allows greater choice by end users. In particular, the physical constraints applied by the size of a traditional wallet or purse – which made the functionality offered by having multiple networks on a single plastic card desirable – no longer apply in the mobile world, where a single device has the potential to store as many cards as the consumer wishes to hold.

Further, the Board's longstanding position is that the issuance of physical dual-network cards promotes payments system efficiency and competition between payment methods. Dual-network cards are convenient for consumers and enhance the ability of merchants to encourage the use of lower-cost payment methods. In 2013, the Bank had received voluntary undertakings by the three debit card networks that addressed competition issues around dual-network cards that had arisen in 2012. These undertakings included commitments by the networks to work constructively to allow issuers to include applications from two networks on the same card. In light of these commitments, the Board considered it would be concerning if, as a new technology were adopted, rules were put in place that might have the effect of impeding the efficient migration of existing competitive arrangements from the physical card to the mobile wallet environment.

Some stakeholders had suggested that it could be in the public interest for the Board to determine a standard that would preclude rules, policies or conduct of any scheme that prevent or make it more difficult and/or costly for issuers to provision a competing network. The Board considered that it was prudent to consult with the industry before considering the case for such a standard.

Consequently, the Bank conducted a public consultation to investigate the issue further, releasing a consultation paper in December 2016. This paper sought the views of stakeholders and interested parties on the competition issues and raised a number of specific questions for consideration.[10] The Bank received over 20 written submissions in response to the consultation paper and conducted a number of consultation meetings with interested parties. Prior to this, the Bank had already consulted with several stakeholders as part of the process of gathering information on the issues.

Following discussion with industry participants through the consultation process, the Bank received commitments from the relevant participants that they would not take any steps that would prevent the use in mobile wallets of both networks on dual-network debit cards. These commitments, which were shared with industry participants, should facilitate greater choice and convenience in the payment options available to cardholders through mobile devices and improve the ability of merchants to encourage the use of lower-cost payment methods. The Board welcomed the willingness of the industry to arrive at an outcome that was in the public's interest without the need for regulation. While the Board's immediate concerns were addressed, mobile payments are an emerging technology and so the Bank will continue to closely monitor developments in this area.

10 Separately, some card-issuing banks had made an application to the Australian Competition and Consumer Comission (ACCC) (which was subsequently rejected) to negotiate collectively with Apple, one of the third-party mobile wallet providers. The principal issue on which the banks wished to negotiate was access to the NFC technology in Apple mobile devices. The Reserve Bank's Consultation Paper did not cover this dispute, which the Board viewed as a separate matter appropriately to be addressed by the ACCC.

Review of Card Payments Regulation

In May 2016, the Bank concluded a *Review of Card Payments Regulation* (the review) with the release of a conclusions paper and the publication of new surcharging and interchange standards. The review was a comprehensive examination of the regulatory framework for card payments, guided by the Board's mandate to promote competition and efficiency in the payments system. Key elements of the reforms took effect during 2016/17, including surcharging rules for large merchants and obligations on acquirers to provide cost of acceptance information to merchants. New interchange benchmarks took effect on 1 July 2017.

The new surcharging standard

The Bank's new surcharging standard, which sought to address issues around excessive surcharging, took effect for large merchants in September 2016. The standard preserved the right of merchants to surcharge but ensured that consumers using payment cards from designated systems cannot be surcharged in excess of a merchant's cost of acceptance for that card system. Additionally, from June 2017, acquirers and payment facilitators were required to provide merchants with easy-to-understand information on the cost of acceptance for each designated scheme that will help them in decisions regarding surcharging. These reforms work in conjunction with legislation passed by the government in 2016 that banned excessive surcharges and provided the Australian Competition and Consumer Commission (ACCC) with enforcement powers.

Following discussions with the Bank, several other schemes that were not formally captured by the Bank's new standards modified their surcharging rules consistent with the new standard:

- American Express and Diners Club, which have had voluntary undertakings relating to surcharging in place since 2002, each revised their undertakings to reflect the Bank's new surcharging standard. The revised undertakings took effect in September 2016 for American Express, and in October 2016 for Diners Club.
- UnionPay provided the Bank with an undertaking not to enforce its 'no-surcharge' rules and related restrictions on merchant pricing, with effect from the end of May 2017. UnionPay also committed to subsequently modify its surcharging rules relating to transactions in Australia by the end of 2017.
- PayPal removed its 'no-surcharge' rule in Australia and introduced terms that prevent merchants from surcharging above their costs of acceptance. The changes became effective in October 2016.

As noted, the new surcharging standard took effect for large merchants in September 2016, which saw some changes to surcharging practices in a number of industries. Notably, several major airlines replaced fixed-dollar surcharges with percentage-based surcharges, reducing the surcharges paid on lower-value fares. The new surcharging framework is effective for all remaining merchants from 1 September 2017. The stricter definition of the costs that can be included in a surcharge, combined with the ACCC's enforcement of the ban on excessive surcharging, will ensure that consumers are only subject to surcharges that fairly reflect the cost to merchants of accepting a particular type of card payment. Consumers can avoid surcharges by using payment methods that attract a smaller surcharge, or no surcharge at all.

In light of the new surcharging standards, the Bank revoked an earlier standard that prohibited MasterCard and Visa from enforcing 'honour-all-cards' and 'no-surcharge' rules. While the no-surcharge rules were already addressed under the new surcharging standards, new voluntary undertakings were required to address the honour-all-cards rules. Consequently, MasterCard and Visa each provided the Bank with undertakings not to enforce honour-all-cards rules. Both these undertakings took effect in September 2016. The effect of the undertakings is to continue the arrangements in place since the mid 2000s, where a merchant is able to accept the credit cards of a scheme without being obliged to accept the debit cards of that scheme, and vice-versa.

The new interchange standards

The Bank's new interchange standards came into effect on 1 July 2017. Under these standards, the weighted-average interchange fee benchmark for debit cards was reduced from 12 cents to 8 cents, and applies jointly to debit and prepaid cards in each designated scheme. The weighted-average benchmark for credit cards was maintained at 0.50 per cent. These weighted-average benchmarks are now supplemented by ceilings on individual interchange rates: 0.80 per cent for credit; and 15 cents, or 0.20 per cent if the interchange fee is specified in percentage terms, for debit and prepaid. To prevent interchange fees drifting upwards in the manner that they have previously, compliance with the benchmark will be observed quarterly, based on transactions in the preceding four quarters, rather than being observed every three years.

After the Bank concluded the review in May 2016, eftpos Payments Australia Limited (ePAL) published a new interchange fee schedule that took effect in November 2016 (Table 4). The

Table 4: Selected Debit and Prepaid Card Interchange Fees: eftpos[(a)]
Excluding GST; cents unless otherwise specified

Category	eftpos Debit and Prepaid	
	May 2016	July 2017
Consumer electronic	4.5	–
Proprietary debit & Digital	–	13.6
Dual-network debit	–	4.5
Strategic merchant[(b)]	0.0 to 4.5	–
Proprietary/Dual-network – Tier 1	–	0.0
Proprietary/Dual-network – Tier 2	–	1.8
Proprietary/Dual-network – Tier 3	–	3.6
Digital – Tier 1	–	1.8
Digital – Tier 2	–	3.6
Digital – Tier 3	–	5.5
Charity	0.0	0.0
Micropayment[(c)]	0.0	–
Medicare Easyclaim Refund	0.0	0.0
Benchmark	**12.0**	**8.0**
Ceiling	**–**	**15.0 or 0.2%**

(a) Fees are paid by the acquirer to the issuer, except for transactions involving a cash-out component
(b) As of July 2017, eftpos has three tiers of strategic merchant rates for each of the proprietary, dual-network and digital categories; prior to this, strategic rates were represented by a range under a single category
(c) Transactions equal to or less than $15
Source: ePAL website

new schedule represented ePAL's first reset since October 2012. It included the introduction of a higher interchange rate of 13.6 cents per transaction for proprietary (eftpos-only) debit cards, while the rate for dual-network debit cards was maintained at 4.5 cents.[11] Previously, both these transaction types attracted a fee of 4.5 cents per transaction.

MasterCard and Visa published new interchange fee schedules effective July 2017, when the new standards came into force. These new schedules saw several rates reduced to comply with the new ceilings on interchange fees for debit and prepaid cards (Table 5) and credit cards (Table 6). These changes are expected to benefit small and medium-sized merchants that do not qualify for strategic interchange rates.

Table 5: Selected Debit and Prepaid Card Interchange Fees: MasterCard and Visa[(a)(b)]

Excluding GST; cents unless otherwise specified

Category	Debit Schemes				Prepaid Schemes			
	MasterCard		Visa		MasterCard		Visa	
	May 2016	July 2017	May 2016	July 2017	May 2016	July 2017	May 2016	July 2017
Consumer electronic	12.7	–	8.0	8.0	12.0	–	8.0	8.0
Consumer standard	0.27%	12.5	0.42%	0.20%	12.0	0.20%	0.42%	0.20%
Consumer premium	0.91%	0.20%	1.05%	0.20%	0.50%	0.20%	0.50%	0.20%
Business/ commercial	0.91%	0.20%	1.05%	0.20%	0.91%	0.20%	1.05%	0.20%
Strategic merchant	–	–	2.0 to 8.0	–	–	–	2.0 to 8.0	–
Tier 1	2.82	2.82	–	2.0	2.82	2.82	–	2.0
Tier 2	3.6	0.15%	–	5.0	3.6	0.15%	–	5.0
Tier 3	–	–	–	8.0	–	–	–	8.0
Charity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micropayment[(c)]	0.36	0.36	–	–	–	–	–	–
Contactless or MasterPass[(d)]	5.9	6.0	–	–	–	–	–	–
Mobile Contactless	–	–	–	15.0	–	–	–	–
Benchmark	**12.0**	**8.0**	**12.0**	**8.0**	**–**	**8.0**	**–**	**8.0**
Ceiling	**–**	**15.0 or 0.2%**	**–**	**15.0 or 0.2%**	**–**	**15.0 or 0.2%**	**–**	**15.0 or 0.2%**

(a) Fees are paid by the acquirer to the issuer, except for transactions involving a cash-out component
(b) Only select interchange categories have been listed. For example, each scheme has a number of industry-specific rates
(c) Transactions equal to or less than $15
(d) Contactless and MasterPass transactions equal to or less than $60, excluding some commercial cards
Sources: MasterCard website; Visa website

11 Rates quoted are for transactions at non-preferred merchants.

Table 6: Selected Credit Card Interchange Fees[(a)(b)]
Excluding GST; per cent

Category	MasterCard		Visa	
	May 2016	July 2017	May 2016	July 2017
Consumer electronic	–	–	0.25	0.25
Consumer standard	0.29	0.24	0.25	0.25
Consumer elite/high net worth	1.82	0.80	2.00	0.80
Business elite/super premium	1.80	0.80	1.80	0.80
Strategic merchants	–	–	0.20 to 0.30	–
Tier 1	0.23	0.18	–	0.21
Tier 2	0.29	0.23	–	0.25
Tier 3	–	–	–	0.30
Charity	0.00	0.00	0.00	0.00
Benchmark	**0.50**	**0.50**	**0.50**	**0.50**
Ceiling	**–**	**0.80**	**–**	**0.80**

(a) Fees are paid by the acquirer to the issuer
(b) Only select interchange categories have been listed. For example, each scheme has a number of industry-specific rates
Sources: MasterCard website; Visa website

Under the new interchange standards, interchange-like payments from the scheme to issuers under the American Express companion card system are now subject to equivalent regulation to that applying to the MasterCard and Visa credit card systems. The Board's decision to apply the interchange standards to American Express companion card arrangements reflected concerns that the regulatory arrangements were not competitively neutral and may have been affecting market developments. Over 2016/17 several issuers announced changes to their credit card programs for both American Express companion cards as well as MasterCard and Visa cards. One major bank announced that it would cease issuing American Express companion cards to new customers, effective March 2017. The other three major banks have reduced the generosity of the rewards programs for their companion card products, effective July 2017. A range of issuers have also reduced the generosity of the rewards programs for their MasterCard and Visa credit cards since the review concluded.

Issues in the ATM System

The Bank has recently been engaging with ATM industry participants on the future of the ATM access reforms that were introduced in 2009. These reforms, which were achieved through a combination of an ATM Access Regime imposed by the Bank and an industry administered ATM Access Code, were designed to increase competition in the ATM market by making it easier for new deployers to become direct participants in the ATM system. They also removed the opaque and highly inflexible interchange fee arrangements that had applied when a cardholder made a transaction at an ATM not owned by their financial institution. These were replaced by a more transparent 'direct charging' regime whereby ATM owners could set their own fees and compete directly with one another for transactions.

One of the concerns that motivated the original reforms was the bilateral access model that existed in the ATM network, which was inefficient and imposed unnecessary cost on new and existing participants. The Bank had hoped that the access framework would only be a temporary measure while the industry moved to a more access-friendly architecture characterised by a single point of access, standardised message formats and the use of international standards where possible.

Various technological and structural changes have occurred in the ATM industry in recent years, which have moved the industry in the direction that the Bank envisaged and may allow a greater role for industry self-regulation in the future. The development of switches and other hub-based infrastructures, for example, has made it easier and cheaper for new entrants to join the ATM system without necessarily having to establish bilateral direct connections with all other participants. Other developments, such as the adoption of EMV standards, have improved the security of the ATM system, but have also rendered elements of the Access Code and Access Regime obsolete. As discussed in the chapter on 'Trends in Payments, Clearing and Settlement Systems', ATM use has been falling in recent years alongside the declining use of cash for transactions, which may also have implications for future ATM access arrangements.

Against this background, the Board had an initial discussion on ATM access issues at its February meeting, where it reiterated its preference for the ATM industry to self-regulate and deal with any access issues on its own if possible. To this end, the Board proposed a number of high-level objectives which, if the industry was able to meet, might provide scope for the Bank to step away from regulation at some point. These include that there are no unnecessary barriers to access for any potential new entrants and that the transparent direct charging model should remain in place for any ATM fees charged to cardholders. The Bank continues to engage with the industry on these issues and hopes to reach agreement on a roadmap for the transition to industry self-regulation at some point in the near future.

Open Data

In the past year, the Board has discussed developments pertaining to data sharing in the banking sector. In the 2017/18 Commonwealth Budget, the government announced its intention to introduce an open banking regime in Australia and has commissioned an independent review to recommend the best approach to implement the regime. The review is due to report by the end of 2017. The Board also noted the final report by the Productivity Commission on Data Availability and Use, which observed that data sharing had significant potential benefits in a range of areas.

A key aim of open banking is to improve the ability of consumers to access their personal banking data and, if they wish, securely share it with other service providers. This has the potential to promote innovation, competition and efficiency in the payments system. For example, if consumers could easily provide their personal banking information to a comparison service, product comparisons could be tailored to individual circumstances. Outcomes could include stronger competition, more effective price signals and better-informed financial decision-making. While there are potentially material benefits from sharing data, there are also a number of challenges that will need to be addressed, particularly in relation to data security and privacy. In this regard, developing a framework for trusted digital identity could be a way of mitigating the scope for identity fraud, while also providing convenient authentication.

Technology and Innovation

The Bank monitors developments in technology and innovation relevant to the payments system (also see the chapter on 'Strategic Priorities for the Reserve Bank's Payments Work'). Staff periodically brief the Board on these developments and on implications for the safety and efficiency of the payments system and potential competition issues.

Much of the focus in payments technology in recent years has been on digital currencies and distributed ledger technology (DLT).[12] The emergence of Bitcoin and its underlying 'blockchain' technology as a means of maintaining a distributed database of ownership of a digital asset has generated considerable interest and investment, particularly in payments and other parts of the financial services industry. The Bank has been actively following these developments, conducting internal research and engaging with a wide range of stakeholders. The application of DLT has the potential to improve the efficiency of various payments, clearing and settlement activities, though the technology at this point is still relatively immature and any implementations will need to meet customer and regulatory expectations in relation to safety and security.

The Bank regularly liaises with a number of participants in the fintech sector. These include companies focusing on Bitcoin and other alternative digital assets, as well as financial institutions that have been experimenting with DLT, and representatives of the various fintech hubs that provide support for small start-up companies.

The Bank also engages with other domestic regulators in relation to payments technology and innovation, both informally and through formal channels. For example, the Bank is an observer on the Australian Securities and Investments Commission's (ASIC) Digital Finance Advisory Committee. The Bank, ASIC, the Australian Prudential Regulation Authority, Treasury and the Australian Transaction Reports and Analysis Centre (AUSTRAC) participated in a Council of Financial Regulators (CFR) working group on blockchain, preparing advice for the CFR and AUSTRAC on the implications of DLT for the financial system and regulation and sharing relevant information among the agencies; the Bank also contributed to a workshop and research conducted by the CSIRO's Data61 on DLT. The Bank has participated in international work on the topic, including the Committee on Payments and Market Infrastructures' (CPMI) Working Group on Digital Innovations, which published a report in February 2017 setting out an analytical framework for central banks and other authorities to review and analyse the use of DLT in payments, clearing and settlement activities. In addition, the Bank regularly communicates with other central banks about their work in the payments technology space.

Operational Incidents in Retail Payment Systems

As electronic payment instrument use increases, the resilience of retail payment systems becomes more important. The Bank collects information from Exchange Settlement Account holders on significant operational retail payment systems incidents as well as other incidents resulting in less severe disruptions to participants' retail payment systems. This supports the Bank's role of monitoring retail operational incidents and disseminating related data, in line with the November 2012 conclusions from an informal

12 Distributed ledger technology and its potential application in the Australian market is also discussed in the section on 'The Bank's FMI Oversight and Supervision Activities'.

consultation on operational incidents in retail payment systems.

Over 2016/17, the Board was kept informed of trends in the occurrence of retail payments incidents, both within and between institutions. There were fewer significant incidents in 2016/17 compared with 2015/16 and the total duration of significant incidents also fell. Similar to previous years, a large share of significant incidents over the past year were caused by software/application failures or were due to changes and upgrades to existing systems. As was the case in 2015/16, online banking and mobile banking were the payment channels most frequently disrupted by operational incidents in 2016/17.

The Bank has continued to provide aggregate statistics on operational incidents to Australian Payments Network (AusPayNet) for review by its board. The Bank has also developed a set of retail operational incident statistics which are intended as a tool to assist industry participants to benchmark their performance. AusPayNet distributed the first set of these statistics to industry participants in June.

International Developments

The Bank regularly monitors payments system regulatory and policy developments in other jurisdictions as they can be relevant in the Australian context given the globalised nature of some payments systems and the scope for similar policy and regulatory issues to emerge. Over 2016/17, a number of jurisdictions implemented regulations focused on improving the efficiency, competitiveness and security of their payments systems. The introduction of faster payments systems continued to gain momentum, while the European Union (EU) worked towards implementation of the revised Second Payment Services Directive (PSD2) and the Interchange Fee Regulation (IFR). A range of jurisdictions have conducted digital currency trials.

Fast payments

The development of fast payment systems in countries around the world continues to gain momentum.

In Singapore, the Fast and Secure Transfers (FAST) service, which has been operational since 2014, has been enhanced by the introduction of a central addressing scheme enabling payments to be made using recipients' mobile numbers. PayNow FAST transfers using the new central addressing scheme were launched in July by seven Singaporean banks.

In Europe, the European Payments Council finalised the rules for the Single Euro Payments Area (SEPA) Instant Credit Transfer scheme, scheduled to launch in November 2017. SEPA real-time payments will be underpinned by European Banking Authority (EBA) Clearing's new RT1 instant payments infrastructure. The system will facilitate euro transactions in less than 10 seconds at any time of the day. In addition, the European Central Bank has decided to develop a new service for instant payments settlement, called TARGET Instant Payment Settlement (TIPS). It will be SEPA Instant compliant and will offer payment service providers an alternative to RT1 for instant settlement. TIPS is scheduled to launch in November 2018.

In the US, some fast payment initiatives have been launched by groups of financial institutions, although the scale and diversity of the US payments system means that broad coverage of end-users is yet to be achieved. In this context, the work of the national taskforce on faster payments has continued. In 2016, the taskforce solicited proposals for faster payments solutions from financial institutions, consumer groups, businesses, payment service providers and financial technology firms. In July 2017, the taskforce released its final report setting out plans for payment service providers to offer competing and interoperable payment solutions utilising a new fast settlement service. The taskforce recommended this service be developed and operated by the Federal Reserve. It is proposed that the settlement service would operate 24/7 and would provide real-time funds availability. To facilitate interoperability and richer remittance capabilities, participating payment service providers would need to adopt ISO 20022 standards or a comparable messaging functionality. The taskforce envisages that fast payment solutions utilising the new settlement capability will be developed by 2020.

In December, Payments Canada began a consultation process on the design of a new core clearing and settlement system and a real-time payment system. The latter is anticipated to include a simplified addressing scheme enabling payments to be directed using the recipient's email address, telephone number or social media alias, similar to the PayID addressing service being built for the New Payments Platform (NPP). Like the NPP, it will also adopt the ISO 20022 global messaging standard, allowing more information to be sent with payments.

The trend towards fast retail payments systems has been analysed by a working group of the CPMI, to which the Bank contributed. The group published a report in November 2016 setting out key characteristics of fast retail payment systems, taking stock of different initiatives in CPMI jurisdictions, and examining the benefits and risks and the potential implications for different stakeholders, particularly central banks.

Payment Services Directive and interchange fee regulation implementation

EU member states have until January 2018 to implement the PSD2 requirements. Under PSD2, member states must ensure that third-party payment service providers are given access to information from a customer's bank account, such as the availability of funds, if the customer provides consent. One of the primary aims of PSD2 is to improve access to customer data held by banks as a way to encourage innovation and promote competition in payment services. The revised directive also extends information and transparency obligations under the original directive to payments that are made between member states and countries outside the EU; it introduces new security requirements to protect consumers against fraud; and it bans card surcharging on transactions where IFR interchange fee caps apply.

As part of the implementation process for PSD2 and the IFR, the EBA drafted several sets of technical standards. The EBA's draft technical standards on customer authentication and secure communication require strong customer authentication (SCA) for online payments of more than €30.[13] The standards also ban data collection and payment initiation services using screen-scraping technology and instead favour development of an EU-wide data sharing standard, for instance, using application programming interfaces (APIs).[14] A second set

13 Defined under PSD2 as an authentication process 'based on the use of two or more elements categorised as knowledge (something only the user knows, e.g. a PIN), possession (something only the user possesses, e.g. a credit card) and inherence (something the user is) that are independent'.

14 Screen-scraping involves the use of software to automatically collect information from websites and systems. Payment initiation service providers can use screen-scraping to obtain customer data by accessing the customer's online account with the customer's login details; this may raise security concerns even if the customer provides consent.

of draft standards relates to the separation of payment card schemes and processing entities under the IFR. The aim of this requirement is to enhance competition by ensuring card schemes that also offer processing (acquiring) services do not give their own card processing entity beneficial treatment to the detriment of competing processors. The EBA's draft included requirements that card schemes and processing entities maintain separate financial accounts, separate workspaces, and ensure the independence of management and staff. Due to industry and regulatory concerns, amendments to both sets of standards have been contemplated by the European Commission (EC). The proposed amendments aim to reduce the impact of SCA requirements on e-commerce, allow screen-scraping in certain circumstances and further separate card schemes and processing entities. The EC is yet to make a final decision on the text of the standards.

As a first step to implementing PSD2 in the United Kingdom, Her Majesty's Treasury transposed PSD2 into the UK Payment Service Regulations. The Regulations give responsibility for supervising payment service providers to the Financial Conduct Authority, with some assistance from the Payment Systems Regulator. Relatedly, the UK's Competition and Markets Authority issued an order requiring the UK's largest banks to develop open APIs to facilitate data sharing with third-party providers. Product information data (such as prices and charges) were required to be made available by the APIs in March; certain transaction data must be made available by mid January 2018.

PSD2 also requires that EU member states ban surcharging on four-party schemes (such as Visa and MasterCard) that are regulated by the IFR; the IFR sets interchange caps of 20 basis points for debit and 30 basis points for credit. In July, the UK government announced it will go beyond the requirements of PSD2 by implementing a ban on all payment card surcharges from January 2018. Excessive surcharges have, in principle, been outlawed in the UK since 2012; however, the government has stated that some businesses have continued to surcharge at rates of up to 20 per cent, leading to the decision to completely ban the practice.

Digital currencies and distributed ledger technology

A number of central banks are devoting resources to research digital currencies, including assessing if there is demand for central banks to issue a digital version of their currencies and if current technologies are sufficiently reliable, scalable and resilient to meet the standards required of a national currency.

In the past year, the Bank of England published a working paper on the macroeconomic implications of a central bank-issued digital currency, while the Bank of Canada published a working paper looking at factors a central bank might consider in assessing the case for issuing a digital currency. In response to a marked decline in the use of physical cash in Sweden since 2009, the Riksbank has indicated that it will decide by late 2018 whether to issue a digital version of the krona which would circulate alongside its existing physical currency. Some other central banks have been conducting research into the uses of blockchain technology for wider applications, such as their payments and securities settlement systems.

Governments and regulators have been continuing to monitor and assess the regulatory framework for privately issued digital currencies, such as Bitcoin, and the distributed ledger technology that often underpins them. In the US, the Securities and Exchange Commission (SEC) denied the listing of a bitcoin-tied exchange traded fund (ETF) based on concerns about the potential for fraud and manipulation in the unregulated bitcoin market. The SEC indicated that a digital currency tied ETF could be considered in the future, should the market become more mature. In Japan, the parliament approved a law that recognises bitcoin as a legal method of payment. The law categorised bitcoin as a type of prepaid payment instrument and also brought bitcoin exchanges under anti-money laundering and know-your-customer regulations.

Oversight, Supervision and Regulation of Financial Market Infrastructures

Financial market infrastructures (FMIs) are institutions that facilitate the clearing, settlement and recording of monetary and other financial transactions. The Reserve Bank has a role in overseeing and supervising three types of FMIs: central counterparties (CCPs) and securities settlement facilities (SSFs)[15] – together referred to as clearing and settlement (CS) facilities – as well as systemically important payment systems.

The Reserve Bank's Regulatory Regime for FMIs

The *Corporations Act 2001* assigns to the Bank a number of powers and functions related to the supervision and oversight of CS facilities. Under the *Reserve Bank Act 1959*, the Payments System Board is responsible for ensuring that these powers and functions are exercised in a way that will best contribute to the overall stability of the financial system.

In accordance with the Reserve Bank Act, the Payments System Board also plays a role in the governance of the Bank's oversight of systemically important payments systems.

CS facilities

CS facilities that operate in Australia are required to be licensed or exempted under Part 7.3 of the Corporations Act. The requirement to be licensed applies to both domestic and overseas facilities. Under this act, the Bank and the Australian Securities and Investments Commission (ASIC) have separate, but complementary, regulatory responsibilities for the supervision of CS facilities.

The Corporations Act assigns to the Bank a number of powers and functions related to the supervision and oversight of CS facilities; in particular, the Bank is responsible for:

- providing advice to the Minister regarding applications for CS facilities, variations to or imposition of conditions on licenses, or the suspension or cancellation of licences
- determining standards (the Financial Stability Standards) for the purposes of ensuring that CS facility licensees conduct their affairs in a way that causes or promotes overall stability in the Australian financial system
- assessing how well a licensee is complying with these standards and its obligation under the Corporations Act, to the extent that it is reasonably practicable to do so, to do all other things necessary to reduce systemic risk.

Under the Reserve Bank Act, the Payments System Board is responsible for ensuring that the Bank exercises these powers and functions in a way that will best contribute to the overall stability of the financial system.

15 Referred to internationally as securities settlement systems.

Financial Stability Standards

The Bank has determined two sets of Financial Stability Standards – one for CCPs and one for SSFs.[16,17] It is an obligation of each licensed CS facility that it meets the relevant set of Standards.

The objectives of the Standards are to ensure that CS facility licensees identify and properly control risks associated with the operation of the CS facility, and conduct their affairs in accordance with the Standards in order to promote overall stability of the Australian financial system. The Standards set principles-based requirements and regulatory expectations, rather than prescribing detailed rules and obligations.

In developing these Standards, the Bank has given close regard to the internationally agreed standards for FMIs set out in the *Principles for Financial Market Infrastructure* (PFMI). The PFMI are designed to ensure that the FMIs supporting global financial markets are robust and well placed to withstand financial shocks. The overall objective is to ensure that FMIs promote stability and efficiency in the financial system.

The consistency of the Bank's Standards with the PFMI has been verified through a peer review conducted in 2015 by the Committee on Payments and Market Infrastructures (CPMI) and the Technical Committee of the International Organization of Securities Commissions (IOSCO), the standard-setting bodies that developed the PFMI.[18]

No new Standards were determined in 2016/17.

16 Available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/securities-settlement-facilities/2012/>.

17 Available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/central-counterparties/2012/>.

18 CPMI–IOSCO, *Implementation monitoring of PFMI: Level 2 Assessment Report for Australia*, December 2015. Available at <http://www.bis.org/cpmi/publ/d140.pdf>.

The application of additional PFMI guidance to CS facilities

In recent years CPMI and IOSCO have developed additional guidance on a number of aspects of the PFMI. This guidance seeks to enhance FMI risk management practices by providing further clarity and detail on the existing requirements within the PFMI. The guidance covers, for example, areas of emerging risk or areas in which CPMI and IOSCO had been identified that there were inconsistencies in how particular standards in the PFMI had been interpreted or adopted. The guidance encourages FMIs to adopt best practices and seeks to foster international consistency, where that is appropriate. Specifically:

- In February 2016 CPMI and IOSCO published a *Statement on Clearing of Deliverable FX Instruments* (the FX Statement) which provides further explanation on considerations such as the management of liquidity risk and ensuring certainty of settlement.[19]
- In June 2016, CPMI and IOSCO published the *Guidance on Cyber Resilience for Financial Market Infrastructures* (the Cyber Resilience Guidance).[20]
- In July 2017, CPMI and IOSCO published *Resilience of Central Counterparties (CCPs): Further Guidance on the PFMI*, which seeks to clarify and elaborate on existing requirements in the PFMI related to CCP resilience.[21] For further details see 'Policy Development' below.
- Also in July 2017, CPMI and IOSCO published revised guidance on recovery of FMIs, in the report *Recovery of financial market infrastructures*.[22]

19 Available at <http://www.bis.org/cpmi/publ/d143.htm>.

20 Available at <http://www.bis.org/cpmi/publ/d146.htm>.

21 Available at <http://www.bis.org/cpmi/publ/d163.htm>.

22 Available at <http://www.bis.org/cpmi/publ/d162.htm>.

The Bank intends to apply this additional guidance in interpreting the relevant Financial Stability Standards. In 2016/17 it commenced assessments of domestic CS facilities against the Cyber Resilience Guidance. In 2017/18 the Bank intends to assess domestic CCPs against guidance on CCP resilience and review the implications of the revised recovery guidance. Currently, no CCP is licensed to clear deliverable foreign exchange (FX) instruments in Australia. However, should this change, the Bank will have regard to the FX Statement in interpreting the relevant CCP Standards.

Licensed CS facilities

At present there are seven CS facilities licensed to operate in Australia:

- The four ASX Group facilities – ASX Clear Pty Limited (ASX Clear), ASX Clear (Futures) Pty Limited (ASX Clear (Futures)), ASX Settlement Pty Limited (ASX Settlement) and Austraclear Limited (Austraclear) – which are domiciled in Australia.
- IMB Limited, an Australian building society, which operates a market for trading in its own shares by its members, and an associated SSF to settle these trades.
- The United Kingdom-based LCH Limited (LCH Ltd).
- The US-based Chicago Mercantile Exchange Inc. (CME).

There were no new CS facility licences granted in 2016/17; there was, however, a cancellation of LCH Ltd's licence to clear for the Financial and Energy Exchange (FEX) facility. LCH Ltd retains its licence to operate the SwapClear service in Australia.

Assessments

As part of its obligations under the Corporations Act, the Bank must periodically assess how well a CS facility licensee is complying with the Financial Stability Standards and doing all other things necessary to reduce systemic risk.[23] The Bank also assesses prospective licensees against these standards at the time of their licence application.

The Bank has set out in policy statements its broad approach to assessments, and also the frequency with which it will conduct assessments.[24,25] These policy statements are summarised below; there were no changes to these policy statements in 2016/17.

Consistent with the CPMI–IOSCO assessment methodology, which encourages greater transparency regarding the activities of FMIs, the Bank publishes its assessments of CS facilities.[26]

Approach to assessments

For all licensed CS facilities, there are general information provision requirements that apply:

- All CS facilities are required to provide timely information to the Bank of material developments.
- All CS facilities must provide the Bank with periodic regulatory reports and regular activity, risk and operational data.

In other respects, the Bank's approach depends on whether a CS facility is an Australian-based facility or its primary place of business is overseas.

For domestic facilities, when undertaking assessments of a domestic CS facility's

23 The exception is IMB Limited, which is currently exempt from the Financial Stability Standards owing to its small size.

24 'The Reserve Bank's Approach to Assessing Clearing and Settlement Facility Licensees', available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/assess-csf-licensees.html>.

25 'Frequency and Scope of Regulatory Assessments of Licensed Clearing and Settlement Facilities', available at <https://www.rba.gov.au/payments-and-infrastructure/payments-system-regulation/frequency-of-assessments.html>.

26 CPMI–IOSCO, *Principles for Financial Market Infrastructures: Disclosure framework and assessment methodology*, December 2012. Available at <http://www.bis.org/cpmi/publ/d106.htm>.

compliance with the standards, the Bank's methodology is guided by CPMI–IOSCO's assessment methodology for the PFMI, which provides a framework for assessing and monitoring observance of the PFMI.

The Bank complements the periodic information it receives with in-person meetings with CS facility personnel, including: semi-annual senior executive-level discussions of strategy and relevant market developments; quarterly meetings with executives/senior management to discuss developments relevant to compliance with the standards and other material developments; quarterly meetings with management/staff to discuss developments in financial and operational risk management; and other ad hoc meetings are held as needed.

The Bank's assessment reports of a domestic CS facility's compliance with the standards typically comprise: an assessment of progress in addressing recommendations and stated regulatory priorities identified in previous assessments; a discussion of material changes in the operation of the facility and their implications for compliance with the standards; a more comprehensive and detailed 'deep dive' assessment against a subset of the standards; and a review of how the CS facility's arrangements address each of the standards.

The Bank's supervisory approach to overseas CS facilities depends on a number of factors:

- whether the supervisory regime in an overseas CS facility's home jurisdiction is sufficiently equivalent to that in Australia
- whether satisfactory information sharing and regulatory cooperation arrangements have been established between the Bank and the relevant overseas authorities.

Where these conditions are met, the Bank will in general look to rely on the CS facility's primary regulator, rather than undertake direct supervision. Given that the Bank and many other jurisdictions have incorporated the PFMI into their regulatory regimes, the Bank would in general expect this to be the case for most overseas CS facilities looking to operate in Australia. However, there may still be some differences in detail between the Bank's standards and the overseas regime that mean the Bank undertakes a direct assessment of the facility's compliance with these aspects of the standards. In practice, these differences are typically where the standards specify Australian-specific regulatory reporting and notification requirements and/or measures to enhance Australian regulatory influence over cross-border facilities.

For all overseas CS facility licensees the Bank reserves the right to gather information through a range of interactions with the licensee to aid its understanding of material developments affecting the licensee or to assess progress against stated regulatory priorities, including participation in supervisory 'colleges' organised by the primary regulator.

In accordance with the above information sharing expectations, the Bank is party to a number of bilateral and multilateral agreements that are relevant to the Bank's oversight of the two overseas CS facility licensees that operate in Australia.

- Bilateral Memoranda of Understanding (MoU) are in place with the Bank of England (with respect to oversight of LCH Ltd) and with the United States (US) Commodity Futures Trading Commission (with respect to oversight of CME). These MoUs establish cooperation arrangements and the exchange of information between the Bank and the relevant overseas regulators.
- The Bank is also a member of two international multilateral cooperative

arrangements as part of its oversight of LCH Ltd: the Multilateral Arrangement for Regulatory, Supervisory and Oversight Cooperation on LCH Ltd (LCH Ltd Global College), which is a forum of LCH Ltd's international regulators; and the LCH Ltd Crisis Management Group, which was formed to create arrangements between international regulators to undertake recovery and resolution planning for LCH Ltd.

Frequency and scope of assessments

The frequency of assessment against the relevant standards is considered with reference to whether: (i) a facility is systemically important in Australia, and/or (ii) has a strong domestic connection. The Bank has determined that the four domestic ASX Group CS facility licensees (ASX Clear, ASX Clear (Futures), ASX Settlement and Austraclear) meet these criteria and therefore are assessed annually. In addition, the Bank has determined that one overseas facility (LCH Ltd) should also be assessed annually.

Assessments of other CS facilities will typically be undertaken at a reduced level of detail and may be carried out on a less frequent basis. In the case of overseas facilities, the assessment cycle of the home regulator will be a relevant consideration. Furthermore, depending on the nature and scope of a CS facility's activities in Australia, detailed assessments against all parts of the standards may not be necessary. Where the Bank has set regulatory priorities, however, an update on progress against these would be expected to be carried out. These arrangements currently apply in the case of CME.

Systemically important payment systems

A key element of the Payments System Board's responsibility for the safety and stability of the payments system in Australia is the oversight of systemically important payment systems.

The only domestic payment system that the Bank regards as systemically important, and hence for which an assessment against international principles is necessary, is the Reserve Bank Information and Transfer System (RITS).[27] Consistent with the criteria for systemic importance outlined in the PFMI, this view reflects the fact that RITS:

- is the principal domestic payment system in terms of the aggregate value of payments
- mainly handles time-critical, high-value payments
- is used to effect settlement of payment instructions arising in other systemically important FMIs.

Effective oversight of RITS is assured through internal governance arrangements within the Bank that separate operational and oversight functions, as well as by transparent assessments against the PFMI. To this end, since 2013 the Bank has published annual assessments of RITS against the PFMI.[28] These assessments are reviewed by the Board, which also reviews any material developments occurring between assessments.

CLS Bank International (CLS) is an international payment system for settling foreign exchange trades in 18 currencies, including the Australian Dollar (AUD). Since CLS settles a significant, and growing, value of AUD-denominated foreign exchange-related payments, the Bank has identified CLS as a systemically important international payment system. CLS is regulated, supervised and overseen by the Federal Reserve, in cooperation with an oversight committee that includes the Bank and a number of other

27 In conducting these assessments the Bank has regard to relevant guidance issued by CPMI and IOSCO. In particular, from 2016/17 the Bank has been applying the June 2016 Guidance on Cyber Resilience for Financial Market Infrastructures.

28 Between 2015 and 2017 the Bank changed the time of year that it conducts its assessment of RITS resulting in a longer gap between these two assessments.

overseas central banks. Through this forum the Bank is involved in overseeing how well CLS meets the requirements of the PFMI. CLS is also required to publish a disclosure describing its operations and approach to observing the applicable principles.

While SWIFT is not a payment system, it provides critical communications services to both RITS and CLS, as well as other FMIs and market participants in Australia and overseas. SWIFT is primarily overseen by the SWIFT Oversight Group (OG), of which the G10 central banks are members. Since SWIFT is incorporated in Belgium, the OG is chaired by the National Bank of Belgium. The Bank is a member of the SWIFT Oversight Forum, a separate group established to support information sharing and dialogue on oversight matters among a broader set of central banks. The SWIFT Oversight Forum gives these central banks an opportunity to input into the OG's oversight priorities. Oversight of SWIFT is supported by a set of standards – the High-level Expectations – which are consistent with standards for critical service providers in the PFMIs.

The Bank also monitors developments in the payments landscape periodically to consider whether any other payment systems should also be subject to ongoing oversight and assessments against the PFMI.

The Reserve Bank's FMI Oversight and Supervision Activities

Day-to-day oversight and supervision of FMIs is undertaken by the Bank's Payments Policy Department, in accordance with the approach to assessments discussed above. In carrying out these activities, the Bank works closely with ASIC as appropriate.

The Bank's oversight and supervision activity is overseen by an internal body of the Bank, the FMI Review Committee, which was established by, and reports to, the Bank's Executive Committee; the FMI Review Committee's annual report is also provided to the Payments System Board. This committee is chaired by the Assistant Governor (Financial System), who is also Deputy Chair of the Payments System Board. Other members include the heads of the Payments Policy, Payments Settlements and Domestic Markets departments, as well as two senior staff members with expertise in FMI-related matters but who are not currently directly involved in the Bank's oversight and supervision of FMIs. A core part of the committee's role is to ensure that oversight activities are carried out in a manner that is consistent with policies established by the Board. The committee meets quarterly, approximately six weeks before Payments System Board meetings, as well as dealing with matters by written procedure as needed. Senior staff of Payments Policy Department provide direct reports to the Payments System Board on the Bank's oversight and supervisory activities.

The following summarises activity and material developments over 2016/17 for the six CS facilities and the systemically important payment systems overseen and supervised by the Bank.

ASX

All four domestic CS facility licensees required to meet the standards are part of the ASX Group (see the chapter on 'Trends in Payments, Clearing and Settlement Systems). In September 2017, the Bank published the 2016/17 assessment of these facilities.[29] This assessment concluded that, except for ASX Clear (Futures), the CS facilities 'observed' all relevant requirements under the Standards; ASX Clear (Futures) 'observed' or 'broadly observed' all relevant requirements

29 The Bank's *2016/17 Assessment of ASX Clearing and Settlement Facilities* is available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/assessments/2016-2017/>.

in the Financial Stability Standards. The steps taken by ASX to address the Bank's regulatory priorities during 2016/17, as well as other material developments, are set out below.

Investment risk

The 2014/15 Assessment of the ASX CS facilities clarified the Bank's expectations for the credit and liquidity risk profile of the ASX CCPs' treasury investments. These expectations were set in light of concerns that the ASX CCPs' treasury investment policy allowed relatively large and concentrated unsecured exposures to the four large domestic banks. After a multi-year transition period, from July 2017 ASX has implemented changes to its treasury investment policy that fully address the Bank's recommendation. From this time, over half of the CCPs' investment portfolio has been invested in government or semi-government bonds, or reverse repurchase agreements secured by such bonds. The remainder of the portfolio is invested in securities issued by authorised deposit-taking institutions (ADIs), or held in deposits with ADIs. Individual unsecured exposures to non-government-related issuers or counterparties are limited to the level of business risk capital held across the two CCPs (currently $75 million). Reflecting these changes, the Bank has raised the ASX CCPs' rating to 'observed' for the Custody and Investment Risk standard.

Liquidity risk management

Consistent with the Bank's regulatory priorities, ASX made a number of enhancements to its liquidity risk management framework over 2016/17. These include:

- restricting the assets in its investment portfolio which can count towards its minimum liquid resource requirement to cash held in accounts at central banks or creditworthy commercial banks, and securities issued by the Australian or State Governments or the New Zealand Government
- refining its liquidity-specific stress scenarios, which measure the CCPs' payment obligations in extreme but plausible circumstances, and developing a framework for stress testing foreign currency liquidity exposures
- testing to ensure that the CCPs are able to liquidate their investments and non-cash collateral, and conducting due diligence around ASX Clear's ability to access its committed liquidity facility.

Default management

In 2015/16 the Bank conducted a detailed assessment of the ASX CS facilities' default management arrangements against the relevant requirements in the Standards. While the Bank assessed that all the CS facilities observed the standard on default management rules and procedures at that time, the Bank made a number of recommendations outlining some additional steps the ASX CS facilities should take to fully meet expectations. Consistent with these recommendations, the SSFs significantly enhanced the documentation supporting their default management frameworks (DMFs), and ASX published additional information on particular aspects of the CS facilities' DMFs. The facilities have also established a multi-year plan to enhance the scope of their default management fire-drills, which the Bank will monitor in the coming assessment periods.

Cyber resilience

A key regulatory priority over 2016/17 has been in the area of cyber resilience. To this end, the Bank, in cooperation, with ASIC, conducted a detailed assessment of the CS facilities' governance arrangements relevant to cyber resilience against the governance chapter in the Cyber Resilience Guidance. ASX is conducting a self-assessment against the remaining chapters of the guidance, which will draw in part from an external review against industry standards, both of which the Bank intends to review during the next assessment period.

Consistent with the Cyber Guidance, ASX has also developed a concrete plan to improve its capabilities to recover from a cyber attack, which builds on ASX's existing cyber security plan and strategy.

Operational review

Following a number of operational disruptions in 2016/17 across both its trading and CS facilities, ASX, at the instigation of the Bank and ASIC, has commissioned an external assessment of its operational risk management arrangements.[30] The review will consider ASX's current technology governance, operational risk practices and control mechanisms. The Bank and ASIC will review the results of the report in 2017/18 and ASX's response to any recommendations made in the review.

CHESS replacement

During 2017 ASX continued its development work on its project to replace the CHESS clearing and settlement system. This is an important element of ensuring that ASX's core infrastructure for the cash equities market meets international best practice, and that its performance, resilience, security and functionality continue to meet the needs of its users. ASX is working with a vendor, Digital Asset Holdings, to develop a potential CHESS replacement based on a permissioned, private distributed ledger technology (DLT) system. ASX intends to make a final decision on whether to implement the DLT solution or use an alternative technology to replace CHESS towards the end of 2017.

LCH Limited

LCH Ltd is licensed in Australia to provide CCP services for over-the-counter (OTC) interest rate derivatives (IRD) and inflation rate derivatives (see the chapter on 'Trends in Payments, Clearing and Setlement Systems').[31] In June, LCH Ltd's licence to clear trades executed on the FEX market, which is not yet operational, was cancelled at LCH Ltd's request.

In December 2016, the Bank published the *2015/16 Assessment of LCH.Clearnet Limited's SwapClear Service*.[32] This assessment concluded that LCH Ltd met the CCP Standards and either met or made progress towards meeting the Bank's regulatory priorities. Steps taken so far by LCH Ltd to address these priorities, as well as other material developments, are set out below.

Operating hours in Australia

LCH Ltd has continued its work to extend the operating hours of the SwapClear service, while ensuring the safety and resilience of its operations. Currently, the SwapClear service is closed for much of the Australian business day, and trades executed during that time are not cleared by SwapClear until the Australian afternoon when the SwapClear service opens. In February, LCH Ltd extended its operating hours for the SwapClear service, opening it from one hour earlier when possible. The official opening time remains at 6 am London time. LCH Ltd expects to have the technical capability of extending SwapClear's operating hours to

30 For instance, in September there was a major disruption to the operation of ASX's equity trading system and in February there was an incident affecting Austraclear following a power outage.

31 In December 2016, the legal name of 'LCH.Clearnet Limited' was changed to 'LCH Limited' in the UK.

32 The Bank's *2015/16 Assessment of LCH.Clearnet Limited's SwapClear Service* is available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/assessments/lch/2016/pdf/lch-assess-2016-12.pdf>.

close to 24/5 after a major system upgrade, but it will need to undertake additional work following the upgrade to implement this extension.

Protected Payments System arrangements in Australia

The Bank has requested that LCH Ltd complete its implementation of its Protected Payments System (PPS) arrangements in Australia to facilitate payments to and from its Australian clearing participants. The four major Australian banks are required to use the Australian PPS arrangements to settle their AUD obligations directly with LCH Ltd using their exchange settlement accounts at the Bank. Three of the four major banks are now meeting this requirement. LCH Ltd is working with the remaining major bank to determine a technical solution to enable it to use the Australian PPS arrangements.

Chicago Mercantile Exchange Inc.

CME is licensed to provide CCP services for OTC IRD, and non AUD IRD traded on the CME market or the Chicago Board of Trade market for which CME permits portfolio margining with OTC IRD. In March, the Bank published its 2017 assessment of CME, which concluded that CME had either met or made progress towards meeting the regulatory priorities identified by the Bank in its previous Assessment. The key priorities and progress made by CME are described below.

Given the nature and scope of CME's current activities in Australia, the Bank did not consider it necessary to conduct a detailed assessment of CME against all of the CCP Standards. Once CME has material direct Australia-based clearing participation or there is a material increase in CME's provision of services in Australian-related products, the Bank will expect CME to ensure that CME's operational and governance arrangements promote stability in the Australian financial system.

Recovery and wind-down plan

The March 2016 assessment set a priority that CME should complete its work to implement appropriate recovery and wind-down plans. In 2016, CME developed or enhanced the recovery and wind-down plans for its three clearing services, including implementing rule changes for its Base clearing service. Where applicable, the Bank anticipates CME will make conforming changes to the 'end of waterfall' rules for the OTC IRD and CDS services in 2017. The Bank will review CME's recovery and wind-down plans once they are finalised.

Investment risk

Over the past year, CME has worked towards expanding the number of investment counterparties it has, including opening accounts at the Federal Reserve Bank of Chicago and the Bank of Canada. This has enabled CME to further reduce the size and concentration of unsecured investments of cash collateral with non-government obligors, and so address the priority set out in the March 2016 assessment.

Reserve Bank Information and Transfer System

RITS is Australia's high value payments system that is used by banks and other financial institutions to settle their payment obligations (see the chapter on 'Trends in Payments, Clearing and Settlement Systems'). The most recent assessment of RITS against the PFMI was endorsed by the Board and published in May.[33] The assessment concluded that RITS had observed all of the relevant principles. The assessment also noted that the

33 The 2017 *Assessment of the Reserve Bank Information and Transfer System* is available at <https://www.rba.gov.au/payments-and-infrastructure/rits/self-assessments/2017/>.

recommendations from the previous assessment in November 2015, relating to cyber resilience and the RITS Regulations, had all been addressed. The key priorities and steps taken by the Bank to address these are set out below.

Cyber resilience

During the assessment period, the Bank completed a series of reviews of RITS cyber resilience arrangements. The reviews concluded that RITS has strong cyber defences overall. Nevertheless some recommendations were made based on these reviews to further strengthen RITS cyber resilience. All high priority recommendations, representing findings requiring prompt clarification or where material risk had been identified, have been implemented. Work is underway to complete lower-priority recommendations and the Bank's Payments Policy Department will review progress through its ongoing oversight of RITS.

RITS was also assessed against the Cyber Resilience Guidance. No significant issues were identified. The assessment concluded that RITS has met the expectation that FMIs develop concrete plans to improve their capabilities to meet the two-hour recovery time objective. In particular, there are concrete plans to implement enhanced monitoring capacities to identify cyber attacks and enhance systems and processes to enable recovery of accurate data following a breach. There are also processes in place to ensure that the Bank evaluates current and emerging technology that could lead to further enhancements to the ability to recover from cyber attacks in a timely manner.

RITS regulations

A new set of RITS regulations was implemented on 27 March. Since the commencement of RITS in 1998, changes in its functionality and activity had resulted in an increasingly complex set of documents governing its operations. The main objective of re-writing these regulations was to improve their clarity. The new regulations also provided an opportunity to move to the 2011 Global Master Repurchase Agreement (GMRA), which (amongst other things) improves upon the 2000 GMRA processes for dealing with a counterparty default.

CLS Bank International

Over 2016/17 CLS progressed plans to develop a stand-alone CCP Service to settle centrally cleared deliverable FX products, with Eurex and LCH Ltd both interested in using the service. CLS's CCP Service will provide net settlement of centrally cleared FX obligations, which will minimise the liquidity risk faced by CCPs using the service. CLS has also announced plans to launch a bilateral payment netting service, which will net payment obligations in more than 140 currencies. The latter is part of plans by CLS to diversify its operations beyond providing FX settlement services.

SWIFT

During 2016/17, cyber resilience remained an important focus of SWIFT and its overseers. In mid 2016, SWIFT introduced a Customer Security Programme, which aims to improve information sharing on threats and emerging best security practices, as well as to enhance security guidelines and provide audit frameworks for users of the SWIFT network. Of particular note, in April 2017, SWIFT formally published a core set of security controls that all customers must meet for their local SWIFT-related infrastructure. SWIFT customers will need to provide a self-attestation against the mandatory controls by the start of 2018, and on an annual basis thereafter.

Policy Development

The Bank works with other regulators (both domestically and abroad) on issues relevant to the regulation and oversight of FMIs. In Australia, much of this work has been coordinated by the Council of Financial Regulators (CFR) and, internationally, the Bank engages with relevant international standard-setting bodies. Where relevant to the Board's responsibilities, the Board has been kept updated on developments and members' input and guidance have been sought.

In light of the international implementation of mandatory CCP clearing for OTC derivatives, the resilience of CCPs remains a strong focus of the global standard-setting bodies. These bodies have established a joint CCP workplan to examine potential risks to stability arising from the increasingly prominent role of CCPs, and to consider the need for additional policy guidance.

The Bank has been closely engaged in this international work, given its relevance to domestic regulatory standards. Domestically, the Bank has also contributed to CFR-led work to develop a special resolution regime for FMIs, as well as continued work on competition in the clearing and settlement of cash equities in Australia.

International

CCP workplan

In light of the increasing systemic importance of CCPs, a focus of international policy work on FMIs over recent years has been on CCP resilience, recovery and resolution. This work is being conducted under a joint CCP workplan developed by CPMI, the Financial Stability Board (FSB), IOSCO and the Basel Committee on Banking Supervision.[34] The Bank has been closely involved in two of the main components of the CCP workplan:

- *CCP resilience and recovery measures.* As discussed earlier, CPMI and IOSCO recently published additional guidance that seeks to clarify and elaborate on existing requirements in the PFMI related to CCP resilience. The additional guidance, which has been informed by work on monitoring implementation across countries, addresses a number of aspects of CCPs' risk frameworks, including stress test and margin practices and associated governance arrangements. At the same time, CPMI–IOSCO also published revised guidance on recovery of FMIs.
- *CCP resolution*. The FSB recently published guidance on the design of effective strategies and plans for the resolution of CCPs.[35] The guidance also covers cooperation between authorities regarding the resolution of CCPs that are systemically important in more than one jurisdiction, including the establishment of crisis management groups. This work builds on an FMI-specific annex to the FSB's *Key Attributes of Effective Resolution Regimes for Financial Institutions*. Over the coming period, the FSB will conduct further work on the adequacy of financial resources for CCP resolution and the treatment of CCP equity in resolution.

Implementation monitoring

The CPMI–IOSCO Implementation Monitoring Steering Group is monitoring the international implementation of the PFMI. Payments Policy Department contributed to four implementation monitoring reports in 2016/17. Two reports were recently published on the extent to which the legal, regulatory and oversight frameworks

34 The workplan and an update on implementation as of July 2017 are available at <http://www.bis.org/cpmi/publ/d165.pdf>.

35 *Guidance on Central Counterparty Resolution and Resolution Planning*. Available at <http://www.fsb.org/wp-content/uploads/P050717-1.pdf>.

that apply to systemically important FMIs in Hong Kong and Singapore, respectively, are consistent with the PFMI. In July, the fourth update examining whether jurisdictions have made regulatory changes reflecting the Principles and Responsibilities was published. Payments Policy is also contributing to a targeted follow-up to a report published in August 2016, which considered the consistency in outcomes achieved in the implementation of the PFMI by ten derivatives CCPs. The scope of both the August 2016 report, as well as the targeted follow-up, included three CCPs that are licensed in Australia: ASX Clear (Futures), LCH Ltd and CME. The follow-up report is expected to be published later in 2017.

Domestic

In developing domestic policy for FMIs, the Bank works with the other regulatory entities constituting the CFR, the coordinating body for Australia's main financial regulatory agencies. During 2016/17, the focus of the CFR's work on FMIs has been on FMI resolution and competition in clearing and settlement of equities.

A resolution regime for FMIs in Australia

During the past year, the CFR agencies have continued work to develop a special resolution regime for FMIs.[36] Alongside this, the CFR will also work with the Government to draft legislation to amend the approach Australian authorities take in assessing whether an overseas CS facility should be subject to regulation in Australia. The proposal, which was consulted on in 2015, rests on a test of the materiality of a CS facility's connection to the Australian financial system, and stakeholders have expressed support for the proposed criteria as well as the need to be flexible.[37]

Competition in clearing and settlement of cash equities in Australia

In March 2016, the government endorsed the recommendations of a review of competition in clearing cash equities in Australia carried out by the CFR and the Australian Competition and Consumer Commission (ACCC). The conclusions from that review were set out in the report, *Review of Competition in Clearing Australian Cash Equities: Conclusions* (the Conclusions).[38] The Government's endorsement of the recommendations from the review confirmed its policy stance of openness to competition, subject to controls being in place to support the safety and effectiveness of such competition, should it emerge.

The CFR consequently released two policy statements in October 2016:

- *Regulatory Expectations for Conduct in Operating Cash Equity Clearing and Settlement Services in Australia* – which set expectations regarding ASX's conduct in operating its cash equity clearing and settlement services until such time as a competitor emerges and address matters relating to governance, pricing and access.
- *Minimum Conditions for Safe and Effective Competition in Cash Equity Clearing in Australia* – which aim to mitigate any adverse implications for financial system stability and

36 The CFR consulted on the resolution regime in early 2015 and released a response to consultation later that year. For more information, see *Resolution Regime for Financial Market Infrastructures: Response to Consultation*. Available at <https://www.cfr.gov.au/publications/cfr-publications/2015/resolution-regime-financial-market/pdf/report.pdf>.

37 *Overseas Clearing and Settlement Facilities: The Australian Licensing Regime - Response to Consultation*. Available at <https://www.cfr.gov.au/publications/cfr-publications/2015/ocsf-aus-licensing-regime/>.

38 The Conclusions and the Government's response is available at <http://www.treasury.gov.au/ConsultationsandReviews/Consultations/2015/Review-of-competition-in-clearing-Australian-cash-equities>.

the effective functioning of markets should competition emerge.[39]

The review of competition in clearing was conducted under the assumption that the prevailing market structure in settlement – in which there is a sole provider of settlement services – would continue for the foreseeable future. However, recent technological developments have challenged that assumption. Accordingly, in March 2017 the CFR and ACCC released a consultation paper *Safe and Effective Competition in Cash Equity Settlement in Australia*.[40] The paper sought feedback on the prospect of competition in equities settlement, and the possible need for policy guidance to support safe and effective competition, should it emerge. The agencies subsequently considered the responses received, with a view to advising the government in the second half of 2017 on the need for additional policy guidance.

An additional element of work underway by the CFR and ACCC is to address some aspects of the policy framework around competition for cash equities clearing and settlement services which are not enforceable under the existing regulatory regime. Accordingly, the agencies will work with government to implement legislative changes in order to fully implement these policy documents.

39 The Minimum Conditions (Clearing) is available at <https://www.cfr.gov.au/publications/cfr-publications/2016/minimum-conditions-safe-effective-cash-equity/pdf/policy-statement.pdf>; The Regulatory Expectations are available at < https://www.cfr.gov.au/publications/cfr-publications/2016/regulatory-expectations-policy-statement/pdf/policy-statement.pdf>.

40 The Consultation paper is available at <https://www.cfr.gov.au/publications/consultations/safe-and-effective-competition-in-cash-equity-settlement-in-australia/pdf/consultation-paper.pdf>.

The Payments System Board's Announcements and Reserve Bank Reports

This section lists developments since mid 2016. *The Payments System Board Annual Report 2006* contained a list of the Board's announcements, speeches and related Reserve Bank reports up to that time. Subsequent annual reports have contained an update.

2016

Media Release 2016-19, 'Payments System Board Update: August 2016 Meeting', 19 August 2016

'The New Regulatory Framework for Surcharging of Card Payments', Tony Richards, 26th Annual Credit Law Conference, 14 September 2016

'Sources of Financial Risk for Central Counterparties', RBA *Bulletin*, September 2016

'Card Payments and the Retail Sector', Malcolm Edey, Australian Financial Review Retail Summit, 28 September 2016

Minimum Conditions for Safe and Effective Competition in Cash Equity Clearing in Australia, Council of Financial Regulators, Canberra, October 2016

Regulatory Expectations for Conduct in Operating Cash Equity Clearing and Settlement Services in Australia, Council of Financial Regulators, Canberra, October 2016

Media Release 2016-28, 'Payments System Board Update: November 2016 Meeting', 18 November 2016

Dual-Network Cards and Mobile Wallet Technology: Consultation Paper, Reserve Bank of Australia, Sydney, December 2016

'The Future of Cash', RBA *Bulletin*, December 2016

2017

Media Release 2017-05, 'Payments System Board Update: February 2017 Meeting', 17 February 2017

'How Australians Pay: New Survey Evidence', RBA *Bulletin*, March 2017

Media Release 2017-10, 'Payments System Board Update: May 2017 Meeting', 19 May 2017

'The Ongoing Decline of the Cheque System', RBA *Bulletin*, June 2017

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ADI	Authorised deposit-taking institutions
API	Application programming interface
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
ATM	Automated Teller Machine
AUD	Australian Dollar
AUSTRAC	Australian Transaction Reports and Analysis Centre
CCP	Central counterparty
CFR	Council of Financial Regulators
CHESS	Clearing House Electronic Sub-register System
CNP	Card not present
CPMI	Committee on Payments and Market Infrastructures
CPS	Consumer Payments Survey
CS	Clearing and settlement
DLT	Distributed ledger technology
DMF	Default management framework
EBA	European Banking Authority
EMV	Europay, Mastercard and Visa
ePAL	eftpos Payments Australia Ltd
ETF	Exchange traded fund
EU	European Union
FAST	Fast and Secure Transfers
FEX	Financial and Energy Exchange
Fintech	Financial technology
FMI	Financial market infrastructures
FSS	Fast Settlement Service
FX	Foreign exchange
GRMA	Global Master Repurchase Agreement
IFR	Interchange Fee Regulation
IOSCO	International Organization of Securities Commissions
IRD	Interest Rate Derivatives
ISO	International Organization for Standardization
KPI	Key Performance Indicator
LVSS	Low Value Settlement Service
MoU	Memorandum of Understanding
NFC	Near-field communication
NPP	New Payments Platform
OG	SWIFT Oversight Group
OTC	Over-the-counter
PAN	Primary account number
PEXA	Property Exchange Australia Limited
PPS	Protected Payments System
PSD2	Second Payment Services Directive

RBA	Reserve Bank of Australia
RITS	Reserve Bank Information and Transfer System
RTGS	Real-time gross settlement
SEC	Securities and Exchange Commission
SEPA	Single Euro Payments Area
SSF	Securities settlement facility
TIPS	TARGET instant payment settlement
TSP	Token service provider
UK	United Kingdom
US	United States
USD	United States Dollar

RESERVE BANK OF AUSTRALIA