Payments System Board Annual Report

2019

RESERVE BANK OF AUSTRALIA

RESERVE BANK OF AUSTRALIA

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17 September 2019

The Hon Josh Frydenberg MP
Treasurer
Parliament House
CANBERRA ACT 2600

Dear Treasurer

RESERVE BANK OF AUSTRALIA PAYMENTS SYSTEM BOARD ANNUAL REPORT 2019

In accordance with section 25M(1) of the *Reserve Bank Act 1959*, I am pleased to submit the Payments System Board's Annual Report for 2019.

There is no statutory requirement to table the annual report in the Parliament. However, you may consider it appropriate to table the annual report on the basis that tabling has proven a useful way of drawing attention to the work of the Payments System Board.

Yours sincerely

Philip Lowe

Payments System Board

Annual Report 2019

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Governor's Foreword

The payments landscape is changing rapidly. The Board has had a full agenda in evaluating these changes and overseeing the evolution of the Australian payments system in a way that promotes competition, efficiency and stability.

A major step forward over recent years has been the building of the New Payments Platform (NPP). Transaction volumes through the NPP have continued to grow steadily, although the full roll-out of NPP services by the major banks has been slower than expected. With some banks still focusing on building out their initial offerings, the development of additional NPP functionality is occurring more slowly than was hoped for. A review conducted during the year by the Bank and the Australian Competition and Consumer Commission made a number of recommendations to improve access to the system and to promote the timely roll-out of NPP services and new functionality.

The Board also continues to pay close attention to developments in card payments. One major focus has been the promotion of least-cost (or merchant choice) routing for contactless debit card transactions to help place downward pressure on payment costs. The Board is pleased to see that point-of-sale acquirers, including the major banks, have now begun to make this functionality available. During the year, the Board also approved some modifications to the existing interchange standards to improve the clarity and operation of the net compensation requirements. A comprehensive review of the regulatory framework for card payment systems will be undertaken in 2020.

The Board has been supportive of the industry's work to materially reduce fraud in card payments systems, especially for card-not-present transactions. It continues to place a high priority on this work. Looking ahead, the Bank will be working with the Australian Payments Council on the needed migration of payment messages in some payment systems to the ISO 20022 standard. This migration presents an opportunity to consider broader changes that would support the efficiency of the overall payments system. In addition, as the payments mix in Australia continues to evolve, the Board will be monitoring the industry's work on the future of the cheque system and the rationalisation of the ATM system. The Board is very supportive of the industry's efforts to address the challenges that people with disabilities can face when using modern touchscreen payment devices.

Over the past year, another priority of the Board has been its oversight of the staff's work with the Council of Financial Regulators (CFR) on its review of the regulatory framework for stored-value facilities. Given the innovation that is occurring in the payments system with new forms of digital payments, it is important that the regulatory regime is fit for purpose and appropriately balances competition and the protection of consumers.

Another major focus of the Board's work is the resilience of Australia's financial market infrastructures (FMIs), including central counterparties. Following a recent review of the Bank's approach to supervising clearing and settlement (CS) facilities, the Board has approved a more graduated supervisory approach, with the degree of oversight commensurate with the CS facility's systemic importance to the Australian financial system. The revised approach will also allow for greater reliance on a foreign regulator where an overseas licensee's home jurisdiction has a sufficiently equivalent regulatory regime. More broadly, the Board has been closely overseeing the Bank's work with other CFR agencies to develop a framework to enable regulators to deal effectively with any situation where an FMI experienced major financial problems.

Finally, the Board has been paying closer attention to the reliability of retail payment systems. It has been concerned about the recent significant increase in the number of operational outages in retail payment services. These outages reduce confidence in the system and can cause great inconvenience to households and businesses. The Bank will be working with the industry and the Australian Prudential Regulation Authority on a standard set of operational performance statistics to be disclosed by individual institutions.

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

Philip Lowe
Governor and Chair,
Payments System Board
4 September 2019

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 in order to minimise the risks of systemic disruptions from payment systems.

Under Part 7.3 of the Corporations Act, the Reserve Bank has a formal regulatory role with the objective of ensuring 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 2018/19.

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 2018/19 are shown below and details of the qualifications and experience of members are provided on pages 9 to 14.

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 2018/19, 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.

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.

Table 1: Board Meetings in 2018/19
Number of meetings

	Attended	Eligible
Philip Lowe (Governor)	4	4
Michele Bullock (RBA)	4	4
Wayne Byres (APRA)	3	4
Gina Cass-Gottlieb	4	4
Deborah Ralston	4	4
Greg Storey	4	4
Catherine Walter	4	4
Brian Wilson	3	4

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 2018, the 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 minor changes were made to the risk register, including in relation to risks to the achievement of policy objectives when the Board relies on industry commitments rather than regulation to implement policy. The control framework was assessed to be operating effectively and managing risks adequately.

Around the same time, the Board conducted its annual review of its own operation and processes. It concluded that Board processes were functioning effectively. Members discussed the relative merits of relying on industry commitments versus regulation to address policy concerns. They noted that different circumstances might suggest one course over the other and agreed that it was important to be transparent in decisions to regulate or not to regulate.

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. Indemnities for those members appointed prior to 1 July 2014 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 for members appointed after 1 July 2014, when the CAC Act was repealed, have reflected the substance of the previous CAC Act restrictions. A revised form of the indemnity for new members of both the Reserve Bank Board and the Payments System Board, which continues to reflect the substance of the previous CAC Act restrictions, was approved by the Reserve Bank Board 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 2018/19.

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 the 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 the 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] In May 2018, the Board approved changes to the Bank's policy on the management of conflicts of interests following discussion of a set of arrangements to govern the Bank's ongoing engagement with NPP Australia Ltd (NPPA). In April 2019, the Bank and NPPA entered into a formal Memorandum of Understanding (MOU) that sets out a framework for engagement and information sharing. The MOU is consistent with the governance arrangements approved by the Board in 2018.

Details of the steps taken to achieve compliance with the conflicts policy, including the minutes of informal meetings between departments, have been audited annually for the past six years, with the results presented to the Board. The most recent audit was conducted in July 2018. In May, the Board updated the Policy to specify that audits will occur at least every two years. Consistent with this, the next audit will take place in the first half of 2020.

In the case of the Bank's oversight of RITS, the Board plays a governance role in managing conflicts of interest. In particular, while an internal financial market infrastructure (FMI) Review Committee has the formal responsibility to review and approve assessments of other FMIs, the Board retains primary responsibility for approving the staff's periodic assessments of RITS.

1 Available at <https://www.rba.gov.au/publications/annual-reports/psb/2018/governance.html#fn1/>.

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.

August 2019

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. He spent two years with the Bank for International Settlements working on financial stability issues. Mr Lowe 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
Chair – Bank for International Settlements Committee on the Global Financial System
Member – Financial Stability Board
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 has also been in 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), Ms Bullock 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

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, and subsequently reappointed on 1 July 2019 for a further 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 from 15 July 2013 to 14 July 2018
Reappointed from 1 August 2018
Present term ends 31 July 2023
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 Hospitals Foundation

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 been widely published in these areas. Professor Ralston 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 Business School and a Fellow of CPA Australia and the Australian Institute of Company Directors.

Other roles

Chair – SMSF Association
Chair – SuperEd
Member – YBF Fintech Hub Advisory Board

Greg Storey

Non-executive Member

Member since 1 August 2018
Present term ends 31 July 2023

Greg Storey is an experienced cards and payments industry professional, with specialist knowledge in the evolution and operation of debit cards, credit cards and payments systems. He was Vice-President and Head of Visa Checkout, Asia Pacific from 2012 to 2016. Mr Storey had over 20 years of experience with Visa, spanning the roll out of numerous VisaNet-related solutions and services, product and strategy, micropayments solution (Payclick) and the roll out of Visa Checkout (and V.me) products across the Asia Pacific region. Prior to his roles at Visa, Mr Storey worked at St. George Bank in various cards and payments roles, as CIO of an independent payment solution provider, and has established and overseen merchant POS and ATM switching operations.

Other roles

Director – Dozen Avenue Pty Ltd

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 financial services 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 – Creative Partnerships Australia
Chair – Financial Adviser Standards and Ethics Authority
Chair – Melbourne Genomics Health Alliance
Director – Australian Foundation Investment Company
Director – Barristers' Chambers Limited
Trustee – Helen Macpherson Smith Trust

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 and a former Chancellor of the University of Technology Sydney. 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

Chair – UTS Foundation
Director – Bell Financial Group Ltd
Senior Advisor – The Carlyle Group

In Memoriam

Vale Paul Costello

The Bank records, with deep regret, that Paul Costello, member of the Payments System Board from 2013 to 2018, died on 5 November 2018.

Accountability and Communication

The Payments System Board seeks to ensure a high degree of transparency and accountability around its actions through the 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 and powers 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 annual performance statement both cover aspects of the Bank's role in the payments system.

Communication

The Board seeks to provide 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

2 For a detailed list of publications, see 'The Board's Announcements and Reserve Bank Reports' p 78.

Meeting of the Payments System Board, 24 May 2019

by 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 each 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 2018/19, senior Bank staff gave a number of public speeches and participated in discussion panels on various payments system-related topics. Speeches covered topics including merchant payment costs, least-cost routing in retail payments, card fraud, trends in cash and cheques usage, resiliency of the payments system, modernising message standards and the New Payments Platform (NPP). Audio files and transcripts of these speeches are published on the Bank's website to improve accountability and communication.

Research

The Bank's quarterly *Bulletin* contains analysis of a broad range of economic and financial issues, including payments system issues from time to time, as well as aspects of the Bank's operations. During the year in review, the *Bulletin* included articles on developments in crypto-assets, surcharging, the NPP, the demand for Australia's banknotes, and the availability of cash deposit and withdrawal services.

To supplement the Bank's research and policy work, statistics on retail payments are collected by the Bank on a monthly basis from financial institutions, card companies, and other payments system participants. The aggregated data on debit, credit and charge cards, ATM transactions, merchant fees, bulk electronic transfers, the NPP and cheques provide insights on how individuals and business make and receive payments. In 2018/19, the Bank significantly expanded the retail payments data that it publishes from

61 series to around 300 series, and published an article in the *Bulletin* which discusses the new data.

As well as articles in the *Bulletin*, the Bank occasionally publishes expanded analysis of payment system topics in Research Discussion Papers. In 2018/19, the Bank published a paper examining the financial costs and benefits of holding a credit card.

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 responsibilities.

Liaison Activity

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

Domestic liaison

The Bank continued to engage extensively with a range of participants in the payments industry in 2018/19. In August 2018 and 2019, the Board held its annual meeting with members of the Australian Payments Council (APC).[3] The most recent meeting included discussion of the APC's work on digital identity and of its Strategic Agenda that was published in June 2019 and which will guide its work over the coming years. The Board welcomed the progress the APC had made on developing a framework to support the development of interoperable digital identity services in Australia, and encouraged APC members to continue to collaborate on the initiative as it has the potential to deliver significant security and efficiency benefits for the payments system and the economy more broadly. Engagement between the Board and the APC occurs pursuant to a Memorandum of Understanding (MOU) between the two organisations that was signed in 2015 and is published on the Bank's website.

In the retail payments area, Bank staff met with a wide range of stakeholders to discuss policy issues and market developments. In 2018/19, this stakeholder engagement included a number of public consultations. In November 2018, the Bank commenced a consultation on the functionality and access to the NPP, and published its conclusions in June. This consultation was undertaken with input and assistance from the Australian Competition and Consumer Commission (ACCC). In February 2019, the Bank commenced a consultation on the operation of the Bank's interchange standards, after informally seeking views from stakeholders over the second half of 2018. This consultation was concluded in May. In April 2019, the Bank commenced a public consultation on ISO 20022 Migration for the Australian Payment System. This consultation is being undertaken jointly with the APC. Bank staff also provided input and assistance to the Council of Financial Regulators' consultation on issues relevant to retail payments regulation as it relates to stored-value facilities.

Outside of formal public consultations, the Bank's meetings with stakeholders on retail payments issues over the past year have focused on accessibility for people with a vision impairment, ATMs, and the debit card market, including the industry's implementation of least-cost routing of contactless debit cards transactions. Bank staff have also engaged with stakeholders regarding their obligations under the Bank's card payments regulation. Another

3 The APC was established in 2014 as a strategic coordination body for the payments industry. Its members are senior executives from a range of payments organisations including financial institutions, card schemes, retail acquirers and other payment service providers, as well as AusPayNet and the Bank (in its role as provider of banking services to the Government). The Bank has responsibility for appointing a number of the APC members.

focus of the Bank's engagement with payments industry participants has been technology and innovation, especially in relation to the use of distributed-ledger technology in payments and payments-related fintech activity more broadly.

Bank staff meet regularly with senior staff of the Australian Payments Network (AusPayNet) to discuss industry developments, including around initiatives to reduce card fraud and AusPayNet's work program to support the APC. These meetings take place consistent with an agreement on liaison arrangements between the two organisations that is published on the Bank's website. The staff also regularly meet periodically with counterparts from a range of Government agencies, including the ACCC. An MOU between the ACCC and the Bank sets out an agreed basis for policy coordination, information sharing and liaison between the two agencies. This MOU was reviewed and updated in December 2018.[4]

The Bank was closely involved in the development of the NPP and remains very engaged even after its public launch in February 2018. The Bank built the Fast Settlement Service, which enables the settlement of NPP payments individually in real time. In addition, the RBA's Banking Department has been involved in the NPP as a direct participant and provides NPP services to its Government clients. The Head of Payments Settlements Department is a Bank-nominated member of the NPP Australia Ltd (NPPA) Board and the Bank also participates in the NPPA Board's management committees. Since the launch, staff from Payments Policy Department have established a regular liaison meeting with senior staff from NPPA to discuss developments in relation to the NPP, including new payment services that are being developed to utilise the NPP infrastructure and access arrangements for new participants. In April, the Bank and NPPA entered into a MOU which formally sets out the regular liaison procedures and information-sharing arrangements between the two organisations.[5] The MOU is consistent with arrangements for the Bank's involvement with the NPP that were approved by the Board in May 2018.

In the financial market infrastructure (FMI) area, the Bank meets regularly with each FMI it supervises. These meetings cover a wide range of topics including developments in financial and operational risk management. As the Bank and the Australian Securities and Investments Commission (ASIC) have complementary regulatory responsibilities for the supervision of clearing and settlement (CS) facilities, the two agencies often coordinate their liaison.

As described in other chapters of this report, the Bank continued to work closely with other agencies of the CFR (and where relevant, the ACCC) on a number of policy issues, including FMI resolution, competition in clearing and settlement of equities as well as review of the regulatory framework for stored-value facilities. The CFR agencies, along with the Australian Transaction Reports and Analysis Centre (AUSTRAC), also participate in a working group considering the implications of distributed ledger technology for the financial system and regulation.

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

Payments Consultation Group

The Bank established the Payments Consultation Group in 2014, with the aim of providing a more

4 See <https://www.rba.gov.au/payments-and-infrastructure/payments-system-regulation/mou/accc-and-the-rba/>.

5 See <https://www.rba.gov.au/payments-and-infrastructure/payments-system-regulation/npp-mou.html>.

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 policy formulation process. The Payments Consultation Group helps to keep the staff and Board well informed of end-user needs and views, as input to the Bank's interactions with the APC and its other policy work.

The Payments Consultation Group met twice in 2018/19 and discussed a range of topics including the provision of least-cost routing functionality to merchants, the NPP, buy-now pay-later (BNPL) payment facilities, operational incidents, accessibility issues for retail payment systems, and other payments innovations and trends. 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 international standards in this area. 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.

In addition to participating in the CPMI, senior staff from Payments Policy Department are 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, and other 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 Payments and Market Infrastructures (WGPMI; formerly known as the Working Group on Payment and Settlement Systems). This group is a regional forum for sharing information and experiences relating to the development, oversight and regulation of retail payment systems and FMIs. The group discussed a range of issues over the year in review, including: the application of new technologies and other enhancements to FMIs, particularly those focused on building resilience; the development of fast retail payment systems and other efforts to facilitate the shift towards electronic payments; the emergence of crypto-asset markets; and efforts to promote fintech development. A study group of the WGPMI has also been examining the development and impact of various digital innovations on financial systems and central banks in the EMEAP region. The areas of focus for this group have included payments-related fintech, distributed-ledger technology, crypto-assets and central bank digital currencies.

The Bank also participates in several multilateral and bilateral arrangements to support its oversight of overseas-based FMIs, such as CLS Bank International, LCH Limited and CME Inc.

Regulator Performance Framework

The Bank adheres to the Australian Government's Regulator Performance Framework (RPF), which aims to encourage regulators to undertake their functions with the minimum impact necessary to achieve regulatory objectives. It is focused on the administration, monitoring and enforcement of regulation, rather than the setting of policy. The RPF requires the Bank to measure and report on its performance against six key indicators that articulate the Government's expectations for regulator performance.

The Bank's fourth annual self-assessment of its performance against these indicators is underway. Self-assessments are conducted in close consultation with the regulated industry. The Bank, in consultation with the entities it regulates, has developed two sets of metrics to allow assessment against the indicators – one focusing on its regulation of CS facilities and the other on its regulation of retail payment systems. Each year, regulated entities are asked to respond to a survey that seeks their feedback on these metrics and on the Bank's regulatory performance more broadly. This year, the Bank sought feedback from all licensed CS facilities, designated card schemes and a sample of card issuers and acquirers. This is the first time that the Bank has sought feedback from card issuers, reflecting new regulatory requirements in Standard No 1 of 2016 and Standard No 2 of 2016.

The Bank appreciates the feedback that was provided by the respondents to the 2019 survey and will consider how best to incorporate and respond to that feedback in its self-assessment. 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 on the Bank's website by the end of 2019.

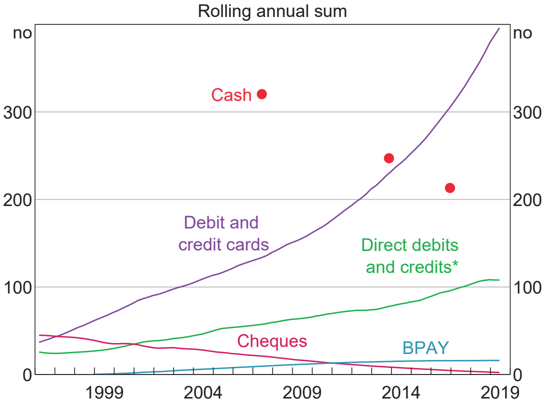
Trends in Payments, Clearing and Settlement Systems

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). This is consistent with the Board's responsibilities to promote efficiency and competition, and control risk, in the Australian payments system.

Retail Payments

The use of electronic payment methods by Australian consumers has grown strongly over recent decades. There were around 525 electronic transactions per person in 2018/19, compared with 235 transactions per person a decade earlier (Graph 1). In contrast, use of paper-based payment methods such as cash and cheques has declined significantly. The transition towards electronic payments has gathered pace as consumer preferences have shifted towards more convenient payment methods. On the supply side, electronic payment services are being enhanced to meet user expectations and new services have been introduced, spurred by technological advances and the entry of technology-focused firms in the retail payments market. The introduction in early 2018 of the New Payments Platform (NPP), which facilitates real-time payments between individuals and organisations, has been a major upgrade to Australia's retail payments infrastructure. While cash use is continuing to decline, the Australian community continues to have good access to ATMs and other cash services.

Graph 1
Transactions per Capita
Rolling annual sum



* Data prior to May 2018 have been adjusted downwards to account for a reporting change that decreased the number of direct credit and direct debit payments

Sources: ABS; AusPayNet; BPAY; Colmar Brunton; Ipsos; RBA; Roy Morgan Research

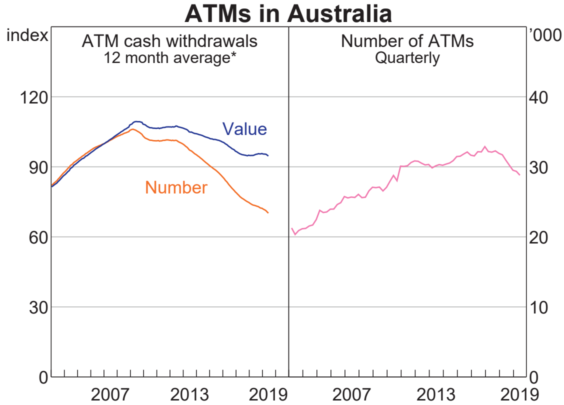
Cash payments

The reduced use of cash for transactions over the past decade largely reflects consumers preferring to use debit and credit cards for their in-person payments, including for lower-value payments. Growth in e-commerce has also played a role, as these transactions require an electronic payment method. Despite the shift towards electronic payments, cash continues to be used intensively by some segments of the community, including older Australians and lower-income households. The Reserve Bank's triennial Consumer Payments Survey (CPS), last conducted in 2016, showed that cash was used in 37 per cent of the number of transactions, down from around 70 per cent in the 2007 survey. The share of cash transactions is likely to have declined further since. The Bank will be conducting another CPS later this year, which will provide a more up-to-date picture on how Australians' use of cash and other payment methods is evolving.

The lower use of cash for transactions has been reflected in a continued decline in ATM cash withdrawals. Australians made an average of around 23 ATM withdrawals per person in 2018/19, down from 40 in 2008. The number and value of ATM withdrawals fell by 4 per cent and 1 per cent respectively, in 2018/19 (Graph 2, left panel).

The sustained reduction in the use of ATMs, together with the fact that many bank ATMs no longer charge fees, has prompted some ATM deployers to rationalise their fleets. The total number of ATMs in Australia has declined by 12½ per cent (about 4,100 machines) since the peak in 2016 (Graph 2, right panel). The largest declines have been to the 'off-branch' fleets of some of the banks, particularly in metropolitan areas where there used to be multiple bank ATMs in close proximity. Relative to our population,

Graph 2
ATMs in Australia



* January 2007 = 100; Seasonally adjusted
Sources: AusPayNet; RBA

however, the size of the ATM network in Australia is still large compared to many other countries. Moreover, geospatial analysis indicates that Australians still have good access to cash services, with nearly all residents living reasonably close to an ATM or other cash withdrawal and cash deposit points (Table A1).

Despite the shift away from cash as a means of payment, demand for cash remains strong. Over the year to June 2019, the value of banknotes in circulation grew by 6 per cent – around its long-run average rate – to reach $80 billion (about 4 per cent of GDP). In recent research by Bank staff, it was estimated that around half to three-quarters of Australian banknotes are held (either domestically or overseas) as a store of value.[6] The share of banknotes used for 'shadow economy' transactions was estimated to be much smaller and lower than the share used for legitimate transactions in the economy. The demand for banknotes as a store-of-value is consistent with the strong growth in high-denomination banknotes in recent years, which are less commonly used in transactions.

6 Wakefield, M and R Finlay (2018), 'Understanding Demand for Australia's Banknotes', RBA *Bulletin*, December, viewed 16 August 2019. Available at <https://www.rba.gov.au/publications/bulletin/2018/dec/understanding-demand-for-australias-banknotes.html>.

Box A

Access to Cash Services

Access to cash withdrawal and deposit services across the community is vital to making sure that the retail payments system remains accessible to all Australians, including those who cannot, or prefer not to, use electronic payments. For most Australians, cash deposits or withdrawals are primarily made at ATMs and bank branches. In some regional and remote communities, there is greater reliance on Australia Post's Bank@Post service for access to cash services.

To examine access to cash services across the community, Bank researchers have quantified the geographic distance to cash deposit and withdrawal points.[1] They determined the position of cash withdrawal and deposit sites in Australia using data published by APRA on the location of authorised deposit-taking institution (ADI) branches and ATMs, data from an independent ATM deployer and a Google search of other ATM locations. This was compared to Australian Bureau of Statistics (ABS) data on the geographic distribution of the Australian population, to estimate how far people must travel to reach these facilities.

The results indicate that the Australian community has relatively good access to cash services, notwithstanding the size of the Australian landmass. Most Australians can deposit cash without having to travel too far, with an estimated 95 per cent of the population living within 5 kilometres of a deposit location (an ADI branch or Bank@Post outlet) as at June 2018 (Table A1). Similarly, most people can withdraw cash without having to travel very far, with an estimated 95 per cent of Australians living within 4 kilometres of an identified withdrawal point (an identified ATM, ADI branch, or Bank@Post outlet) as at June 2018.[2]

Table A1: Australians' Access to Cash Services

	June 2018			Change from June 2017		
	Distance in kilometres[(a)]		Number[(b)]	Distance in kilometres[(a)]		Number[(b)]
	95 per cent	99 per cent		95 per cent	99 per cent	
ADI deposit[(c)]	5	17	10,195	0.0	–0.1	–290
ADI withdrawal[(d)]	5	16	22,834	0.0	–0.1	–1,466
All identified withdrawal points[(d)]	4	15				

(a) Distance within which 95 per cent and 99 per cent of Australia's usual resident population lives, to nearest kilometre
(b) Total number of access points of given type
(c) Deposit locations are branches and Bank@Post outlets (some ATMs also have deposit capabilities, but these tend to be located in branches) but excludes Citibank branches, which are cash free
(d) Withdrawal locations are ATMs, branches and Bank@Post outlets
Sources: ABS; APRA; Banktech; Google; RBA

1 Delaney L, A O'Hara and R Finlay (2019), 'Cash Withdrawal Symptoms', RBA *Bulletin*, June, viewed 16 August 2019. Available as <https://www.rba.gov.au/publications/bulletin/2019/jun/cash-withdrawal-symptoms.html>.

2 By way of comparison, in Sweden – the third-largest country by land size in western Europe, but nonetheless 17 times smaller than Australia – a government committee recently recommended that a maximum of 0.3 per cent of the population should have to travel more than 25 kilometres to withdraw cash, and a maximum of 1.2 per cent of the population should have to travel more than 25 kilometres to deposit cash (Swedish Government, 2018).

An estimated 99 per cent of the population has a cash withdrawal location within 15 kilometres and a cash deposit location within 17 kilometres. The remainder of the population (1 per cent or about 250,000 people) need to travel further to reach their nearest cash access point. These people generally live in rural areas; it is in these areas where cash use tends to be higher and the infrastructure that might enable alternative payment methods, such as mobile phone coverage, tends to be less developed.

For Australians in remote locations, the Bank@Post service is often the nearest in-person banking service. This is because Australia Post arranges its network of post offices to deliver broad geographic coverage, whereas banks tend to locate their branches and ATMs in relatively more populous areas that can service more customers. Australia-wide, estimates suggest that 90 Bank@Post outlets are 50 kilometres or more from the nearest ADI branch (Figure A1).

Looking to the future, it seems likely that the number of ATMs and other cash access points in Australia will decline further. To date, access to cash services has been reasonably robust to declines in the number of access points. For example, the decline in the number of ADI deposit and withdrawal locations over the year to June 2018 had little impact on the distance that most Australians must travel to access cash. This reflects the fact that most ATM removals to date have been in metropolitan areas, particularly in locations such as shopping malls where there were multiple bank ATMs in close proximity. While further removal of access points in metropolitan areas is unlikely to significantly impact cash access, removal of facilities in less populated areas or a change in the provision of Bank@Post services may reduce the ability of some Australians to access cash. The Board believes that households and businesses should have reasonable access to cash services for as long as they wish to continue using cash. Ongoing monitoring of changes in the provision of cash services across the community will therefore be important.

Figure A1: Bank@Post Outlets Further than 50 Kilometres from Nearest ADI Branch

Sources: APRA; RBA

Table 2: Non-cash Payments

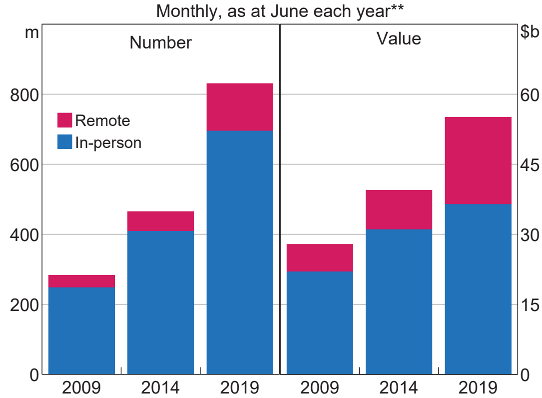
	2018/19					Average annual growth 2008/09–2018/19	
	Per cent of total		Average value	Growth (per cent)		Per cent	
	Number	Value	$	Number	Value	Number	Value
Cards	74.5	5.9	65	13.0	7.4	11.7	7.3
Debit cards[(a)]	53.4	3.0	47	16.5	12.4	14.2	10.9
Credit cards	21.1	2.9	111	5.2	2.5	7.3	4.6
Direct Entry[(b)]	20.7	78.7	3,119	–4.2	5.8	6.1	2.9
BPAY	3.1	4.2	1,111	2.4	8.0	4.9	9.7
Cheques	0.5	6.1	10,856	–25.0	–34.9	–16.2	–8.0
Property Exchange Australia	0.0	4.0	821,780	111.0	149.9		
New Payments Platform[(c)]	1.2	1.2	853				
Total	**100.0**	**100.0**	**821**	**9.5**	**5.6**	**9.4**	**2.6**

(a) Including prepaid cards
(b) Data prior to May 2018 have been adjusted downwards to account for a reporting change that decreased the number and value of direct credit and direct debit payments.
(c) The New Payments Platform was launched to the public in February 2018.
Sources: BPAY; RBA

Card payments

Debit and credit cards combined are the most frequently used payment method in Australia, with card payments now representing about three quarters of the total number of non-cash retail payments (Table 2). In 2018/19, domestic cardholders made around 9.8 billion domestic card payments worth $635 billion, an increase of around 7.4 per cent from the previous year. The average value of card payments has declined to $65 because of the increased use of cards for low-value purchases. The convenience of using cards for these payments has been enhanced over recent years by the widespread adoption of contactless 'tap-and-go' functionality by merchants. Over the past decade, the number of in-person card payments has increased at an average annual rate of 11 per cent (Graph 3).

Graph 3
Card Transactions by Customer Presence*
Monthly, as at June each year**



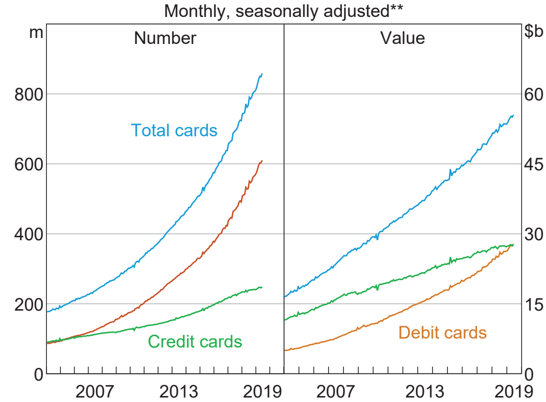
* Includes all transactions acquired in Australia; excludes overseas transactions made by Australian-issued cards
** Changes in reporting methodology in May 2018
Source: RBA

Consumer demand for convenience has also supported strong growth in remote card transactions over recent years. Remote transactions include online payments and payments made through mobile apps (e.g. ride-sharing or meal delivery apps). Remote transactions accounted for 16 per cent of the number of all card purchases in June 2019, compared with 12 per cent five years earlier.

By value, remote transactions account for a higher share of total transactions, at 34 per cent, reflecting that the average transaction size for remote transactions ($138) is much larger than for in-person transactions ($52).

Strong growth in card payments has been driven by the rising popularity of debit cards (Graph 4). The number of debit card transactions grew at an average annual rate of 14 per cent over the past decade, well above the rate of 7 per cent for credit cards. Growth in the value of debit card payments also outpaced that for credit cards. Consequently, over the past decade, debit cards rose from a third to one-half of the total value of card transactions. There are now around 43 million debit cards on issue in Australia, compared with 21 million credit cards.

Graph 4
Transactions by Card Type*
Monthly, seasonally adjusted**

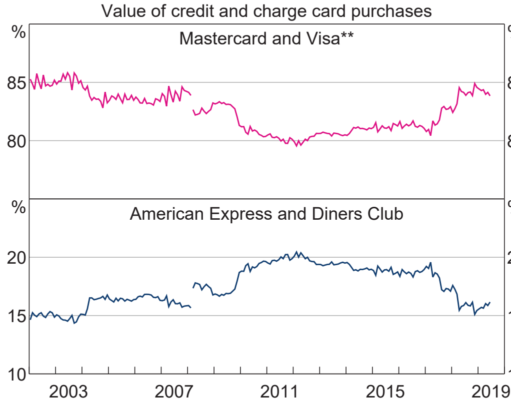


* Includes all transactions made by Australian-issued cards; excludes transactions made by foreign-issued cards
** Changes in reporting methodology in March 2008 and May 2018
Source: RBA

The share of debit card payments made using the international (Mastercard and Visa) systems has been increasing steadily over time, while the share of the domestic eftpos system has been declining. This is despite almost all debit cards having access to the eftpos network, either as a dual-network card (i.e. including both eftpos and one of the major international card schemes) or as an eftpos proprietary (single network) card. The rising market share of the international schemes can be partly attributed to the increasing use of contactless payments, which were only supported by the international debit schemes until eftpos introduced the capability recently. In addition, the eftpos network currently does not support online and other remote transactions. For credit card payments, the market share of Mastercard and Visa has also increased over recent years, to around 84 per cent by value of transactions. By contrast, the combined market share of American Express and Diners Club has declined over this period (Graph 5). This mainly reflects the closure of the major banks' American Express companion card programs after regulatory reforms by the Reserve Bank in 2016 made the American Express companion card system subject to equivalent regulation to that which applies to the Mastercard and Visa systems. The decline in market share from the closure of the companion card arrangements has only partly been offset by an increase in issuance of American Express proprietary cards.

With card payments continuing to grow in importance as a payment method, the

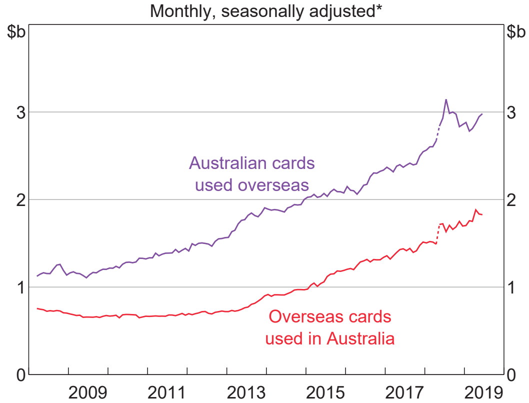
Graph 5
Market Shares of Card Schemes*
Value of credit and charge card purchases



* Seasonally adjusted; excludes scheme debit after March 2008, which resulted in a 1.5 percentage point break
** Includes Bankcard before 2007
Source: RBA

Bank recently began publishing additional data on how and where card payments are made. This followed an update to the Bank's retail payments statistical collection.[7] The expanded data include series on in-person and remote purchases (discussed above), as well as international transactions. Transactions using foreign-issued cards in Australia and international transactions using Australian-issued cards have grown significantly over the past decade, supported by increases in tourism and cross-border e-commerce activity (Graph 6). In 2018/19, around $21 billion of purchases in Australia were made using foreign-issued cards. The AUD value of overseas purchases using Australian cards was larger, at $35 billion (about 5½ per cent of all transactions using Australian cards). Prepaid cards accounted for a significant share (around 10 per cent) of total overseas purchases using Australian cards. Some prepaid cards are marketed to consumers as a cash management tool for overseas travel, providing consumers with the option to purchase foreign currencies at a pre-determined exchange rate.

Graph 6
International Card Transactions
Monthly, seasonally adjusted*



* Series break due to changes in reporting methodology in May 2018
Source: RBA

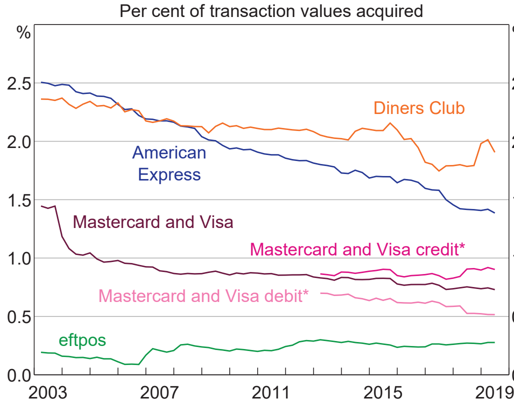
7 For more information on the publication of these new series, see Mitchell S and H Wang (2019), 'New Payments Insights from the Updated Retail Payments Statistics Collection', RBA *Bulletin*, March, viewed 16 August 2019. Available at <https://www.rba.gov.au/publications/bulletin/2019/mar/new-payments-insights-from-the-updated-retail-payments-statistics-collection.html>. The relevant statistical tables C1–C2.2 are available on the Bank's website at <https://www.rba.gov.au/statistics/tables/>.

Merchant fees

Merchant fees are paid by merchants to their financial institution (or directly to the card scheme in the case of American Express and Diners Club) for the provision of card acquiring services. The level of merchant fees is heavily influenced by the wholesale interchange fees paid from a merchant's financial institution (known as the acquirer) to the cardholder's financial institution for each transaction, as well as the scheme fees that acquirers pay to the card schemes. Merchant fees can also include annual or monthly fees, terminal fees, terminal rentals, and joining fees charged by acquirers.

For transactions on Mastercard and Visa credit cards, the average merchant fee remained around 0.9 per cent over 2018/19 (Graph 7). The average fee for American Express transactions was also unchanged, at around 1.4 per cent, but this followed a significant decline over the previous few years as American

Graph 7
Total Merchant Fees
Per cent of transaction values acquired



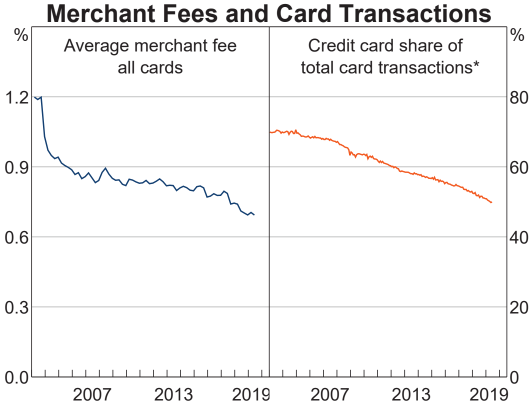
* Changes in reporting methodology slightly decreased the average fee for debit cards and slightly increased the average fee for credit cards in June 2018. The overall average fee for Mastercard and Visa was unaffected.
Source: RBA

Express sought to bolster its merchant acceptance. The average fee for Diners Club transactions increased over 2018/19, although this scheme accounts for a small and declining share of card transactions.

Average merchant fees for transactions on debit cards were also fairly stable over 2018/19. For the Mastercard and Visa debit schemes, the average fee remained around 0.5 per cent, while the average fee for eftpos transactions was around 0.3 per cent. As discussed in the chapter on 'Retail Payments Regulation and Policy Issues', most card acquirers have recently enabled least-cost routing functionality for contactless transactions on dual-network debit cards. This has encouraged stronger competition between the debit card schemes, which could place downward pressure on debit card acceptance costs for merchants.

Taking a longer run perspective, there has been a considerate fall in economy-wide average merchant fees since the early 2000s when the Bank started its card payments reforms (Graph 8). This reflects both the significant fall in merchant fees for most payment systems and also the marked shift from credit cards towards debit cards, which tend to be less expensive.

Graph 8
Merchant Fees and Card Transactions



* By value of transactions, seasonally adjusted
Source: RBA

Direct Entry and BPAY payments

While cards are the most common payment method, Direct Entry payments still account for the bulk of the value of non-cash retail payments (Table 2). Banks and other financial institutions have traditionally used this system for a wide range of payments, including direct debits, consumers' internet 'pay-anyone' transactions and various types of bulk payments (such as salary and welfare payments) by businesses, corporations and governments. However, with the recent introduction of the NPP (see below), some banks are now sending 'pay-anyone' transactions through the NPP instead of the Direct Entry system. This likely contributed to the decline in the number of Direct Entry payments of around 4 per cent in 2018/19, compared with average annual growth of 6 per cent over the past decade. The average value of Direct Entry payments has declined over the past decade, but remains large relative to other electronic payment methods, at a little over $3,000.

In 2018/19, the number and value of BPAY transactions increased by 2½ per cent and 8 per cent, respectively, a little below the average rate of growth over the past decade. Consumers and businesses use the BPAY system to make a range of bill payments, including for utilities, education fees and investments. While BPAY payments are much fewer than card payments, the high average value of these payments (around $1,100) means they account for a greater share of the value of electronic retail payments than either credit or debit cards, although significantly less than Direct Entry payments.

New Payments Platform

The New Payments Platform (NPP) is a new payment system launched in early 2018 that facilitates retail payments between bank accounts that are settled in real-time, with immediate funds availability to the recipient, on a 24/7 basis. By comparison, Direct Entry payments are settled in batches, several times during the day or the next business day. NPP payment messages are also capable of carrying more data, so richer remittance information can be attached to a payment, which can assist with reconciliation and record-keeping processes. In addition, the NPP incorporates a 'PayID' service, which allows a payment to be addressed to a registered mobile phone number, ABN or email address (instead of sending a payment to a BSB and account number). At present, most NPP payments are made through a customer-facing service called Osko; over time other payment services that use the NPP's capabilities are likely to be developed.

There are currently around 80 financial institutions offering NPP payment services to end users, up from about 60 at launch (Table 3). This includes both institutions that participate directly in the NPP, as well as a large number of smaller financial institutions and one non-bank payment provider that access the platform indirectly through the services of a wholesale aggregator or other sponsoring participant. The number of entities providing NPP services will continue to grow: a number of mid-sized banks are in the process of joining and it is likely that other non-bank participants will connect to the platform in the future.

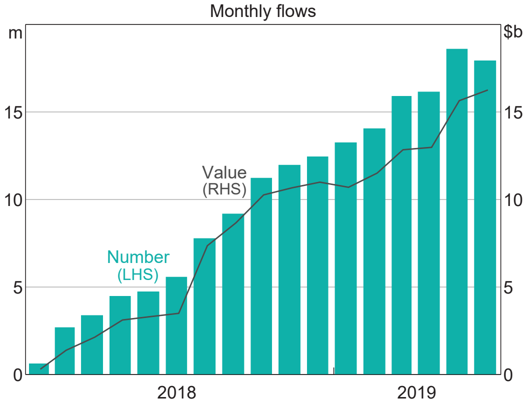
Financial institutions have generally taken a staged approach to their rollout of end-user NPP services, enabling different banking channels, customer segments and payment capabilities according to their own schedules and priorities. For example, several of the major banks prioritised retail customers over business customers and some banks prioritised their mobile banking channels over their internet banking channels. The slower-than-expected rollout of NPP services, particularly outward payment functionality, meant that network effects were not as readily achieved as they would otherwise have been. Accordingly, in September 2018, the Chair wrote to the chief executive officers (CEOs) of the major banks, seeking commitments in relation to their delivery of NPP services to end users. Each of the CEOs confirmed their commitment to delivering NPP functionality. The Board will continue to monitor the progress made by industry, including in relation to development of new channels and services. Despite the uneven (and in some cases slow) roll-out, the number of end users with access to fast payment services and the number and value of transactions going through the NPP have been growing steadily since the launch. As at the end of June, there were more than 65 million Australian bank accounts accessible via the NPP (estimated at about 90 per cent of all accounts that will eventually be reachable) and around 3.1 million PayIDs had been registered. In 2018/19, the platform processed around 150 million payments worth $130 billion (Graph 9).

Table 3: Number of Active NPP Participants and Identified Institutions

Date	Participants[(a)]	Identified Institutions[(b)]	Total
February 2018	10	51	61
August 2018	10	62	72
February 2019	11	66	77
May 2019	11	69	80

(a) Of the 13 participants that funded the development of the NPP, 2 are yet to connect
(b) Institutions that connect to the NPP indirectly through NPP participants
Source: NPPA

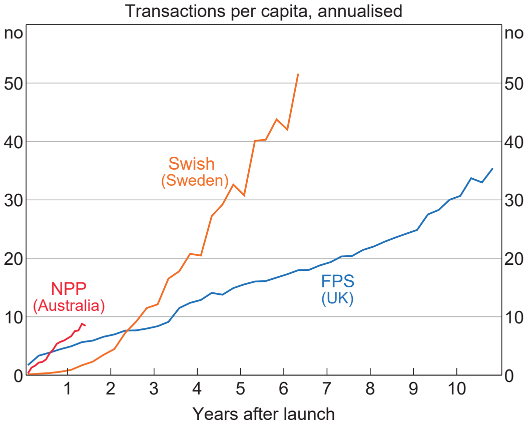
Graph 9
New Payments Platform
Monthly flows



Source: RBA

While NPP transaction amounts are still very low compared with other retail payment systems in Australia, the adoption of the NPP is proceeding at least as quickly as occurred for some comparable fast payment systems that were launched in other countries (Graph 10).

Graph 10
Use of Fast Payments Systems
Transactions per capita, annualised



Sources: FPSL; Getswish; National statistics agencies; NPPA

As noted earlier, some banks have begun to migrate some of their direct credit payments to the NPP (such as 'pay anyone' transfers), which helps explain the relatively high average NPP transaction value of around $850. Moreover, it is expected that other Direct Entry payments could migrate over time. For example, the industry is discussing building a 'consent and mandate service' for the NPP, which could facilitate recurring NPP payments as an alternative to direct debits through the Direct Entry system. A number of other capabilities are also being developed for the NPP so that it can be used for a range of other payment use cases.[8]

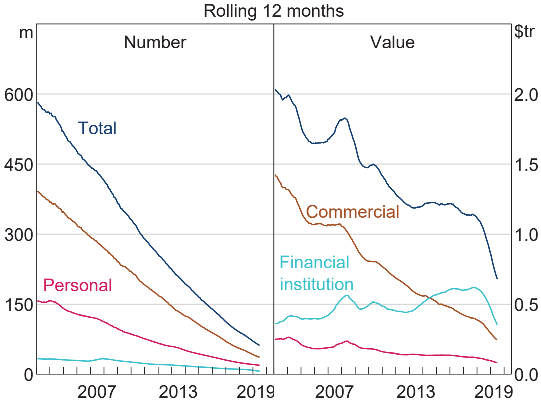
Cheque payments

Cheque use in Australia continues to decline at a rapid rate as consumers and businesses transition to more convenient electronic payment methods (Graph 11). In 2018/19, the total number and value of cheque payments decreased by 25 per cent and 35 per cent, respectively. There were less than 2.4 cheque transactions per person in the year (compared with around 45 per person in the mid 1990s) and the number of cheque payments is now less than ½ per cent of all non-cash payments. There was a particularly large decline in the value of financial institution (bank) cheques in 2018/19 as a result of e-conveyancing systems such as Property Exchange Australia (PEXA) becoming mandatory for certain transactions in NSW, Victoria, and Western Australia. This trend is expected to continue as other states and territories move towards e-conveyancing systems. The NPP, with its speed and rich data capabilities, could also provide a superior alternative to cheques in other use cases.

As cheque use declines, the per-transaction cost of supporting the cheque system will continue to rise. This is likely to prompt more businesses and other payees to stop accepting cheques. Given this trend, it will be appropriate at some point to close down the cheque system. The Australian

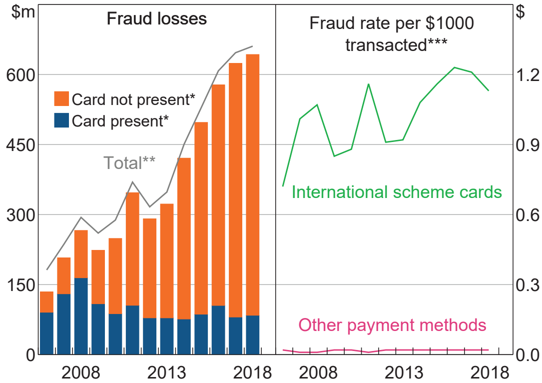
8 See Box A in RBA (2019), 'New Payments Platform Functionality and Access Consultation Conclusions Paper', June. Available at <https://www.rba.gov.au/payments-and-infrastructure/new-payments-platform/functionality-and-access-report.html>.

Graph 11
Cheque Payments
Rolling 12 months



Source: RBA

Graph 12
Payment Fraud Losses
Calendar Year



* International scheme cards only
** Includes cards, cheques, eftpos and ATM transactions
*** Series breaks in 2008 and 2018 due to changes in reporting methodology
Sources: AusPayNet; RBA

Payments Council recently developed a strategy for managing the decline of the cheque system, which recommended a collaborative approach by industry to support the payment needs of remaining cheque users during the transition to electronic payment methods. AusPayNet is undertaking several initiatives to support this strategy, including customer education and advocating for the removal of the few remaining formal requirements for cheques to be used.

Payment fraud

According to data collected by AusPayNet, total losses related to fraudulent payment transactions increased by 2 per cent in 2018, to about $660 million – a slower rate of growth than in the few years prior (Graph 12, left panel). Fraud losses from international scheme cards (which includes transactions on debit, credit and charge cards that are issued and/or acquired in Australia) rose by about 3 per cent. In contrast, fraud losses from eftpos proprietary cards (which are not currently used for remote transactions), ATM transactions and cheques all declined in 2018. Historically, nearly all fraud losses have been incurred on international scheme cards, and the estimated fraud loss rate for these cards (currently about 110 cents per $1,000 transacted) is much higher than for the other payment types (2 cents per $1,000 transacted) (Graph 12, right panel).

The driver of card fraud losses in recent years has been the fraudulent use of international scheme cards for card-not-present (CNP) transactions (i.e. those undertaken online, by phone or mail order). Losses from this type of fraud increased by a further 3 per cent in 2018, to around $560 million. Around 60 per cent of CNP fraud losses in 2018 occurred at Australian merchants (on both Australian and overseas-issued cards), with the remainder perpetrated overseas using Australian-issued cards. The industry has been working to reduce CNP fraud given rising losses and the expected continued growth in online card transactions. An industry framework to mitigate CNP fraud was recently developed by AusPayNet and came into effect in July 2019. The core feature of the framework is a requirement for multi-factor authentication of the cardholder in online CNP transactions where either merchants or issuers consistently exceed specified fraud thresholds (for further details see the 'Retail Payments Regulation and Policy Issues' chapter).

Card-present (CP) fraud losses from international scheme cards are lower than they were a decade ago. The introduction of enhanced security measures, such as chip-and-PIN, has helped reduce fraud losses from counterfeit and card skimming. However, CP fraud committed with lost and stolen cards has been growing in recent years, and rose substantially again in 2018 (by 32 per cent) to $55 million. The rise in this type of fraud has likely been facilitated by tap-and-go payments that do not require a PIN for transactions below $100.

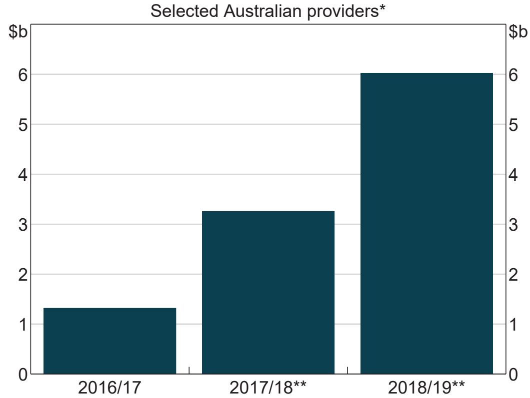
Innovation in retail payments and new market entrants

Innovation in the provision of retail payments in Australia in recent years has been spurred by advances in digital technology (such as those associated with the internet, mobile devices and data processing) and the entry of new firms into the payments market, including 'big tech' conglomerates and smaller 'fintechs'. Much of the innovation by these firms has been to the ways in which people make payments and the types of payment services provided, amid changing customer expectations about the ease of using different payment methods. Other initiatives have focused on improving the security of payments. In most cases, these new players still rely on the existing payment system infrastructure and payments system participants to facilitate payments in Australia.

One prominent example of technology firms' entry into the retail payment market over recent years has been the launch of mobile payment platforms, or digital wallets, such as those offered by Apple, Google and Samsung. These are applications on smartphones and other mobile devices that store electronic representations of payment cards that can be used to make contactless payments at the point-of-sale using the near-field communication (NFC) or quick response (QR) code functionality of the mobile device to communicate with a payment terminal. Mobile payment applications offer convenience and security to cardholders. While point-of-sale transactions using digital wallets were less than 1 per cent of consumer payments at the time of the Bank's last CPS in 2016, this share has likely increased since then as more card issuers have begun to support the use of their cards in digital wallets. The Bank will be gathering further information on the use of digital wallets for payments in its next CPS later this year.

'Buy now, pay later' (BNPL) services are another technology-enabled payment method that has expanded rapidly in recent years. These are services in which customers are able to purchase goods or services but defer payment via low- or zero-interest instalments to the BNPL provider, typically over 1–2 months. These services have become widely accepted by merchants in a number of retail segments, both online and in person. Data from several large BNPL providers indicates that the value of BNPL transactions has grown considerably in the past few years (Graph 13). The number of providers and products in the BNPL sector has also expanded during this period.

Graph 13
BNPL Payments Processed
Selected Australian providers*



* Includes services offered by Afterpay, FlexiGroup and Zip Co
** Afterpay includes both Australia and New Zealand payments
Sources: Afterpay; FlexiGroup; Zip Co

From a consumer perspective, the popularity of BNPL services may relate to their convenience and potentially providing a lower-cost alternative to consumer credit. There are indications that BNPL services are used more intensively by certain segments of the population, particularly younger people, who may not have a credit card. A recent study by ASIC indicates that more than 60 per cent of BNPL users are aged between 18 and 34.[9] For merchants, BNPL services may be attractive because they may facilitate increased sales. In addition, as merchants are paid upfront by the BNPL provider, they do not bear the risk of fraud or customer non-payment. However, merchants pay fees to the BNPL provider that are typically much higher than the fees they would pay on other payment methods, such as credit and debit cards. Most BNPL providers also have rules that prevent merchants from levying a surcharge on the customer to recover those fees. This can be problematic for merchants that feel compelled to offer BNPL services as a payment option for competitive reasons, but are unable to recoup the merchant fees from the customers that directly benefit from the service. The Bank will be considering if there are any policy issues associated with the growth of BNPL services as part of its 2020 review of card payments regulation.

Innovation and the entry of new tech-driven players have also occurred in the market for international money transfers. Traditionally, international money transfers have been processed through the correspondent banking network, whereby an individual payment may be intermediated by several banks before reaching its destination. Given the involvement of multiple intermediaries, these cross-border payments have typically been much slower and costlier to complete than domestic payments, with little transparency about the status of the payment at any given time. In recent years, a number of new market entrants have sought to address these limitations. A common business model involves the provider maintaining bank accounts in both the sending and receiving countries, which means a money transfer can be implemented without a chain of international intermediaries (which can be the case with a correspondent banking model). In addition, most new providers offer online-only services, which further reduces their operating costs relative to banks and other incumbent providers. While the new providers account for only a small share of the Australian cross-border payments market, some have experienced strong growth in transactions in recent years. With the number of people seeking to make cross-border payments rising, the Bank is planning to devote more attention to cross-border payments as part of its mandate to promote competition and efficiency in the payments system (see the chapter on 'Strategic Priorities').

Crypto-assets are another financial innovation that has attracted considerable interest in recent years.[10] Bitcoin and the large number of other crypto-assets that have followed it were largely designed to be electronic payment mechanisms that do not rely on the involvement of a central party like a bank to verify and record transactions. They are often touted as being an efficient, anonymous and borderless way of making payments. However, in practice, no crypto-assets have been widely adopted as a means of payment and there are very few merchants that accept them as a means of payment. Instead, demand for crypto-assets has mostly been focused on their use as a speculative investment, and this has likely contributed to the significant volatility in their prices. The Bank's assessment is that existing crypto-assets like

9 Australian Securities and Investments Commission (2018), 'Review of Buy Now Pay Later Arrangements', Report 600, November.

10 Crypto-assets are sometimes also described as cryptocurrencies or crypto-tokens.

Bitcoin do not meet the usual attributes of money and have various shortcomings that prevent them from becoming more widely used for everyday payments.[11] Besides price volatility, which means they are not a good store of value, there are issues around scalability and uncertainty about settlement finality that remain key barriers to widespread adoption.

In recent years, newer crypto-assets have been launched that attempt to address some of these shortcomings. For example, a number of so-called 'stablecoins' have emerged that seek to minimise price volatility by anchoring the token to a reference asset (such as a sovereign currency or gold) or a basket of assets. In some cases, these rely – often unsuccessfully – on an algorithmic approach that attempts to maintain the value of the coins by managing the supply to match demand, such that the market price tracks the underlying reference asset closely. Alternatively, some stablecoins have been able to achieve this by having their coins on issue fully backed by the reference asset. Even so, the use of these stablecoins has still been fairly limited to date. However, some observers have suggested that recent high-profile stablecoin initiatives of large financial institutions and technology companies (including the 'Libra' initiative being developed by a consortium that includes Facebook, Mastercard, Visa, PayPal and others) could become more widely adopted (see the chapter on 'Retail Payments Regulation and Policy Issues' for further discussion of Libra).

High-value Payment and Settlement Systems

In Australia, the final settlement of AUD interbank payment obligations occurs across Exchange Settlement (ES) 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.

Reserve Bank Information and Transfer System

RITS is Australia's high-value payments system, which is used by banks and other approved institutions to settle their payment obligations on a RTGS basis. RITS is used each day to also settle time-critical wholesale payments for other financial market infrastructures (FMIs): AUD pay-ins to or pay-outs from CLS; margin payments to central counterparties (CCPs); and debt and equity settlement obligations arising in securities settlement systems. Securities settlement involves delivery of the security in exchange for payment, typically through a securities settlement facility (SSF). RITS also settles the interbank obligations arising from non-cash retail payments. Over the past financial year average daily volumes and values of RTGS transactions in RITS increased broadly in line with the longer term trends (Table 4 and Graph 14).

RITS also facilitates the multilateral net settlement of interbank obligations arising from other systems. Multilateral net settlement involves the settlement of net obligations among three or more parties. This includes the settlement of obligations from non-cash retail payments – such as cheques, Direct Entry payments and card transactions – most of which are netted among participating financial institutions and sent through the RITS Low Value Settlement Service for multilateral net settlement.

11 See Dark C, D Emery, J Ma and C Noone (2019), 'Cryptocurrency: Ten Years On', RBA *Bulletin*, June, viewed 16 August 2019. Available at <https://www.rba.gov.au/publications/bulletin/2019/jun/cryptocurrency-ten-years-on.html>.

Table 4: Payments in Australia

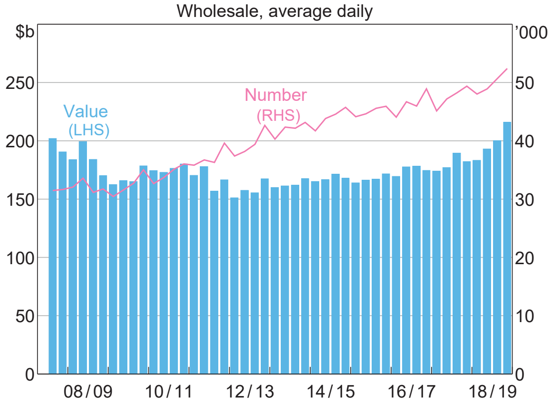
Daily average[(a)], July 2018–June 2019

	Number[(b)]	Annual Growth	Value[(b)]	Annual Growth	Interbank settlement value in RITS	Annual Growth
	'000s	(per cent)	$ billion	(per cent)	$ billion	per cent
RITS RTGS	50	5	198	10	192	9
SWIFT payments	*46*	*5*	*117*	*9*	*117*	*8*
Austraclear[(c)]	*4*	*4*	*68*	*15*	*62*	*13*
RITS cash transfers	–	–	*13*	*–6*	*13*	*–6*
CLS	74	25	324	15	3	–2
Retail payments	52,057	11	45	5	6	7
Direct Entry[(d)]	*12,667*	*5*	*40*	*9*	–	–
Cheques	*239*	*–25*	*3*	*–35*	–	–
Credit/Charge cards	*11,613*	*11*	*1*	*12*	–	–
Debit cards	*27,538*	*15*	*1*	*15*	–	–
Equity settlements[(e)]	–	–	9	12	1	5
Property settlements (PEXA)[(f)]	2	110	2	150	1	150
NPP	600	–	0.5	–	0.3[(g)]	–

(a) Business days (NPP payments made over seven days but expressed as an average per business day for comparability)
(b) Includes payments between customers of the same financial institution
(c) Includes margin payments to ASX's CCPs and obligations arising from debt securities transactions; Excludes intraday repurchase agreements.
(d) Includes BPAY
(e) Values based on gross value of novated and non-novated equity trades settled through ASX Settlement
(f) Net value of property settlement batches; each property settlement batch may involve a number of payments
(g) Interbank settlement value in FSS
Sources: ASX; CLS; RBA

Graph 14
RTGS Transactions

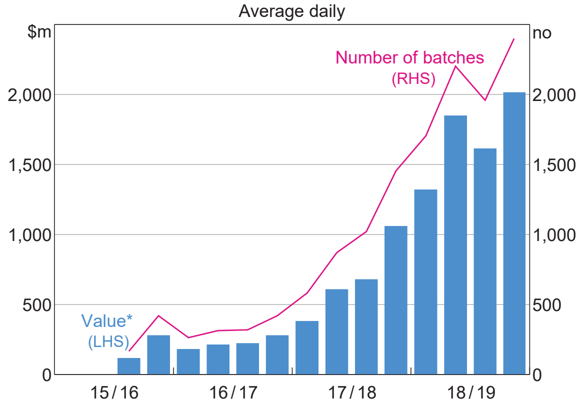
Wholesale, average daily



Source: RBA

Direct Entry payments account for 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; eftpos scheme obligations; and property settlement transactions, managed by PEXA. Batch settlement values have grown very strongly in the past two financial years due largely to property settlement activity by PEXA (Table 4 and Graph 15). The payments for PEXA property transactions are submitted into RITS as multilateral net batches that settle once the property transfer has been confirmed by the land titles office.

Graph 15
Property Settlement
Average daily



* Total value of multilateral net batches
Source: RBA

The Fast Settlement Service (FSS), which operates as a separate service of RITS, was publicly launched with the NPP in February 2018. It settles retail transactions submitted via NPP on an RTGS basis. Average daily settlement values in the FSS have steadily increased over the year, consistent with the rate of growth in NPP transaction values (Graph 9).

CLS Bank International

CLS is an international settlement 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 to around $324 billion this year consistent with a rise in the average daily turnover in the Australian dollar.

Securities settlement facilities

In Australia, 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 National Stock Exchange of Australia and the Sydney Stock Exchange Limited. The average daily value of cash equity settlements through ASX Settlement increased by around 11 per cent in 2018/19 to $9.1 billion.

Austraclear Limited (Austraclear) provides SSF services for trades in debt securities, including government bonds and repurchase agreements. Over the past year, the average daily value of debt securities settled in Austraclear increased by 17 per cent, to $56 billion.

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; this activity is known as clearing. 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 (to a specified confidence interval) on a participant's portfolio in the event they default. Accordingly, 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.[12]

Four CCPs are licensed to provide services in Australia:

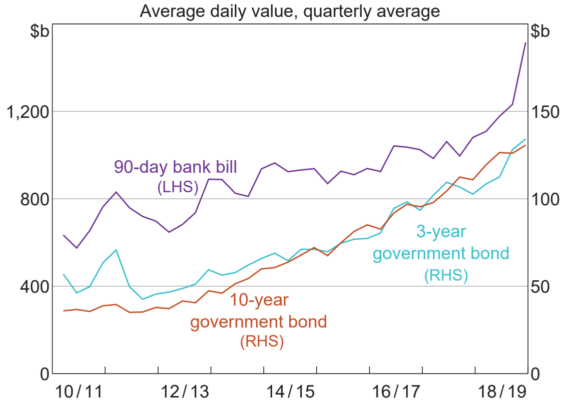
- ASX Clear Pty Limited (ASX Clear) provides CCP services for ASX-quoted cash equities, debt products and warrants traded on the ASX and Chi-X markets and equity-related derivatives traded on the ASX market or over-the-counter (OTC).
- ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) provides CCP services for futures and options on interest rate, equity, energy and commodity products traded on the ASX 24 market, as well as AUD and NZD-denominated OTC interest rate derivatives (IRD).
- LCH Limited's (LCH Ltd) SwapClear service provides CCP services for OTC IRD and inflation rate derivatives.
- 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 February, CME's licence was varied to permit the provision of clearing services for 13 AUD-denominated cash-settled power and USD-denominated cash-settled commodity futures and option contracts to be traded on the financial market operated by FEX Global Pty Ltd (FEX). The service is expected to launch in the coming months.

12 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.

Exchange-traded products

The ASX CCPs clear exchange-traded futures and options, as well as cash equities. Notional values outstanding in the three largest interest rate futures contracts increased strongly through 2018/19 (Graph 16). Total trading activity in interest rate futures in the June quarter of 2019 was 11 per cent higher than in the June quarter of 2018. The notional value of ASX SPI200 futures outstanding fluctuated in 2018/19 to also be higher over the year, but the notional value of equity exchange-traded options (ETOs) declined (Graph 17). Turnover in cash equities also grew over 2018/19 (Graph 18).

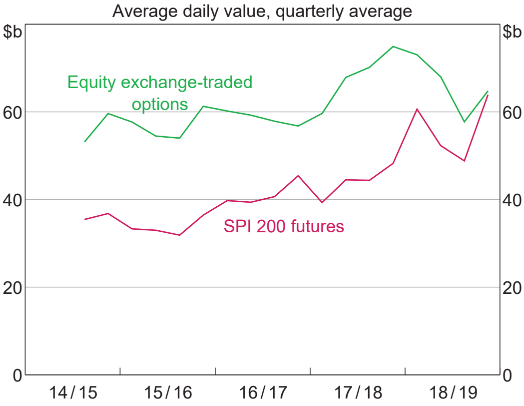
Graph 16
ASX Clear (Futures) Notional Value Outstanding of Interest Rate Futures
Average daily value, quarterly average



Sources: ASX; Bloomberg

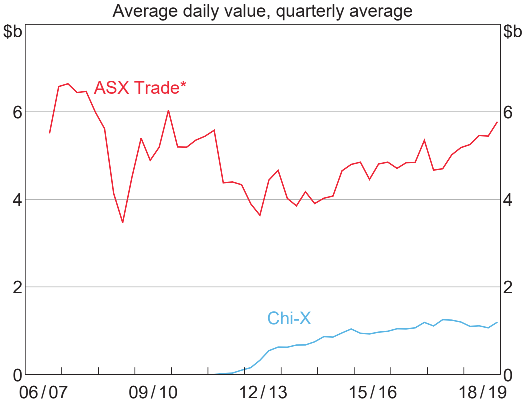
Interest rate futures and the ASX SPI200 futures comprise the majority of exposures, as measured by initial margin, at ASX Clear (Futures).These exposures increased in 2018/19 (Graph 19), reflecting growth in the notional value outstanding across the major contracts and an increase in margin rates charged on SPI200

Graph 17
ASX Notional Value Outstanding of Equity Derivatives
Average daily value, quarterly average



Sources: ASX; Bloomberg

Graph 18
Cash Equities – Trading Activity
Average daily value, quarterly average



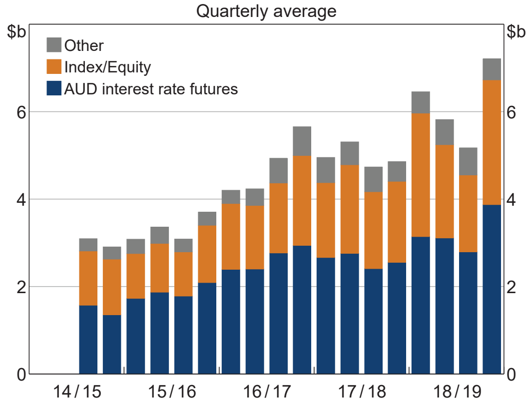
* Excludes cash equities trades on Chi-X, which are also cleared through ASX Clear

Sources: AFMA; ASIC; ASX

and Treasury bond futures. Initial margin also increased substantially in early 2019 as a result of the reallocation of client positions between accounts, which resulted in higher margin requirements due to a loss of netting benefits.

ASX Clear manages exposures from its participants' trades in cash equities and equity ETOs (other than the ASX SPI200 futures). Exposures from cash equity transactions are typically much lower than for equity derivatives because of the short duration of cash security

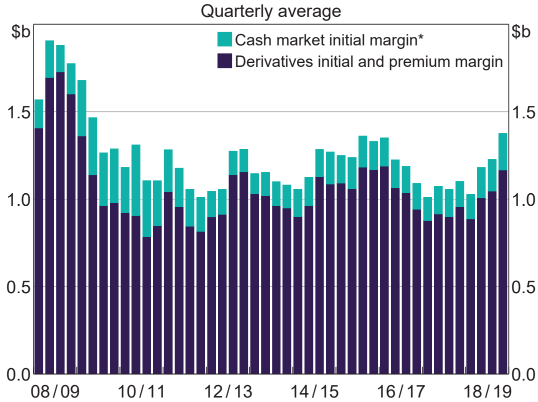
Graph 19
ASX Clear (Futures) Initial Margin
Quarterly average



Source: ASX

trades at two days. ASX Clear's total exposures, as measured by margin, increased in 2018/19, reflecting a rise in equity index option positions (Graph 20).

Graph 20
ASX Clear Margin
Quarterly average



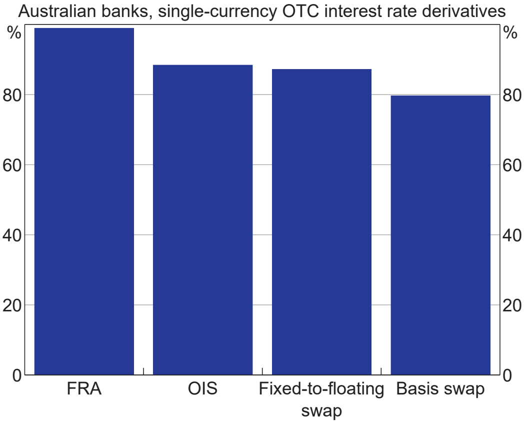
* Notional amount until 7 June 2013; Real Risk methodology used until 18 July 2012, Cash Market Margining used thereafter

Source: ASX

Over-the-counter interest rate derivatives

There has been rapid growth in the proportion of OTC IRD that are centrally cleared. Consistent with the G20's OTC derivatives reforms, mandatory central clearing of OTC IRD between internationally active dealers came into effect in Australia in April 2016; this applied to IRD denominated in AUD and the major currencies. Other regulations, such as higher margin and capital requirements for OTC derivatives that are not cleared, and factors such as increased liquidity and netting benefits, have also provided incentives for firms to clear more of their derivatives. Prior to 2012, Australian banks cleared almost none of their IRDs, whereas they now clear over 85 per cent of their single-currency interest-rate swaps (Graph 21).

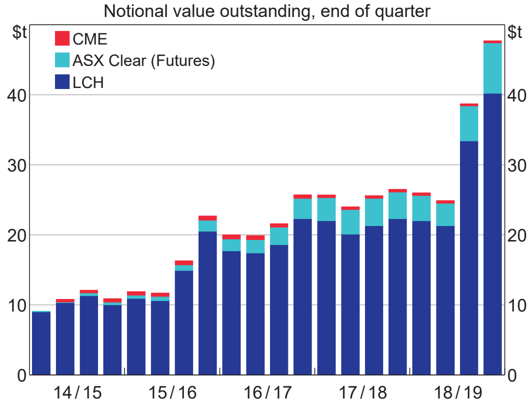
Graph 21
Share Centrally Cleared*
Australian banks, single-currency OTC interest rate derivatives



* 31 May 2019; proportion of AUD-equivalent notional value outstanding in all currencies; excluding intragroup trades
Sources: DDRS; RBA

ASX Clear (Futures), CME and LCH Ltd all offer central clearing for AUD-denominated IRD. As at June 2019, 84 per cent of centrally cleared AUD OTC IRD outstanding were cleared at LCH Ltd, with most of the remaining share cleared at ASX Clear (Futures) (Graph 22). Interest rate swaps and overnight index swaps (OIS) account for the majority of outstanding AUD positions, while basis swaps, zero-coupon swaps and variable notional swaps are also cleared. The notional value of all centrally cleared AUD-denominated OTC IRD increased significantly in 2019. This was driven by activity in OIS (short-term interest rate swaps tied to the cash rate), consistent with strong growth in activity in the 90-day bank bill

Graph 22
Cleared AUD OTC Interest Rate Derivatives
Notional value outstanding, end of quarter



Sources: ASX; CME Inc; LCH Ltd

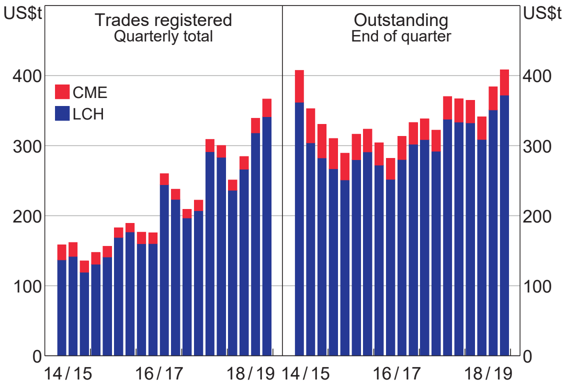
futures contract, and was attributed to changing expectations regarding the likely path of the cash rate. Activity in OIS is typically more volatile than other interest rate swaps, although they contribute significantly less to risk exposures because they are relatively short-term in duration.

ASX Clear (Futures) provides clearing services for AUD- and NZD-denominated IRD, while LCH Ltd and CME provide clearing services for OTC IRD in a broader range of currencies. AUD-denominated contracts make up a small share of outstanding contracts in all currencies – around 8 per cent at LCH Ltd's SwapClear service and less than 1 per cent at CME as at the end of June.

ASX Clear (Futures) has eight participants in its OTC service and SwapClear has six Australian-incorporated entities participating directly, while CME has no Australian direct participants. A number of Australian-based banks, superannuation funds and other institutional investors clear products at all three CCPs indirectly, as clients of other direct participants.

The notional value of OTC IRD trades registered in all currencies increased at both LCH and CME over 2018/19 (Graph 23). Growth in exposures, as measured by initial margin, increased at a

Graph 23
Cleared OTC Interest Rate Derivatives (All Currencies)
Notional value



Sources: CME Inc; LCH Ltd

slower pace than trades registered. One reason for the difference in growth between trades registered and exposures is that new trades often offset participants' existing or new positions. Participants can eliminate these offsetting positions through the use of compression services, with the effect that the notional value of outstanding OTC IRD positions is growing more slowly than measures of activity such as trades registered.

Strategic Priorities for the Reserve Bank's Payments Work

At its November 2018 meeting, the Payments System Board endorsed a set of strategic priorities to guide the Reserve Bank's payments policy work. These priorities reflected the Bank's assessment of the 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 have been focused on these strategic priorities. The Board will periodically review the strategic priorities as the payments and FMI landscape evolves.

Understanding the Implications of Technology and Innovation in Payment Systems and FMIs

The payments, clearing and settlement industries have been going through a period of rapid technological change and innovation. New technologies are being applied, which is resulting in new products and services that better meet the needs of end users but which can also bring particular risks into sharper focus. Technology is also lowering barriers to entry, which is facilitating the entry of non-traditional players and changing market structures and competitive dynamics. There has been significant investment in fintech firms, many of which are using new technologies to address frictions and gaps in payments and settlement processes. This includes the emergence of digital banks, and potential new securities settlement facilities relying on digital technologies. Large global technology ('bigtech') companies like Apple and Google and online platforms like Facebook and Amazon are also looking to leverage their extensive user networks and technology capabilities to provide improved payment services. The introduction of open banking in Australia is also expected to facilitate increased competition from entities looking to leverage customer data held by banks to provide more convenient and personalised payment services. Finally, many FMIs are looking to improve and expand the scope of their services through new technology, such as in the case of ASX's current project to replace its cash equities clearing and settlement (CS) system, CHESS.

Technology-driven changes to the payments system and FMIs could have significant implications for the Bank's regulatory and oversight work, and also potentially for the way the Bank operates. The Bank needs to be in a position to understand how new technologies are being applied and what the implications are for competition, efficiency and the stability of payment systems and FMIs. This will require frequent liaison and possibly collaboration with innovators, technology providers and other industry stakeholders, as well as users affected by new technologies.

The Bank will also look to utilise its recently established in-house Innovation Lab as a way to help improve its understanding of new and emerging technologies that are relevant to its payments policy and FMI responsibilities.

The entry of technology-enabled players has the potential to significantly alter the structure of the payments industry and could raise access and competition issues that the Bank may need to address. For example, issues may arise in relation to how new entrants access existing payments infrastructures. There is also the potential for technology 'lock-out' issues to arise, whereby access to beneficial new technologies is restricted, or new technologies are applied, in ways that undermine competition and efficiency. The Bank will continue to work with other domestic regulators and the Treasury with a view to making the legal and regulatory framework accommodative of 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.

Overseeing the Evolution of the Payments Mix and Promoting Reliable, Secure and Low-cost Electronic Payment Services

As discussed in the chapter on 'Trends in Payments, Clearing and Settlement Systems', Australia's payments mix is continuing to evolve. The use of paper-based payment methods – cash and cheques – is continuing to decline, while the use of electronic payments, like cards and bank transfers, is growing. If anything, these trends have accelerated in recent years as innovations, such as contactless cards and digital wallets, have made electronic payment methods more convenient, accessible and secure. The availability of the New Payments Platform (NPP), and services that utilise its capabilities, should also provide additional impetus to the migration towards electronic payments. Consistent with its mandate, the Bank has a role to play in overseeing the transition towards an efficient and reliable payment system, while also making sure that the needs of the users of the payments system are adequately met. This raises a number of priorities for the Bank's payments policy work:

- 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 late 2019, for example, the Bank will undertake its fifth triennial survey of consumer payments, with the results to be published in the first half of 2020. The coverage of the survey will continue to evolve to take account of changing payment preferences and innovations.
- The shift to electronic payments, particularly cards, means merchants are becoming more reliant on acquirers and online payment providers for their payment needs. It is therefore important that the market for card acquiring services is competitive, efficient and responsive to the needs of merchants. The Bank has taken a number of regulatory actions aimed at improving competition and efficiency in the market for card payment services and recently has been pushing acquirers to provide least-cost routing functionality as a way to give merchants greater control over their payment costs. However, there continue to be concerns raised by some stakeholders about the degree of competition in the acquiring market. Given the importance of supporting the shift to electronic payments, the Bank will be closely monitoring the state of competition in the market for acquiring

services. Many of these issues will likely be addressed as part of the next comprehensive review of card payments regulation that the Bank will undertake in 2020.

- While the Bank's regulatory work to date has focused on improving competition and efficiency in the market for domestic retail payments, retail payments are increasingly crossing borders, whether that be businesses servicing foreign clients or buying supplies from abroad, or individuals sending money overseas or making online purchases from foreign retailers. However, cross-border retail payments are typically slower, costlier and more opaque than domestic payments. This may partly reflect the additional risks that must be managed and the larger number of intermediaries and other complexities involved, but there are concerns that inefficiencies and a lack of competition may be contributing to these outcomes. Recently, a number of new tech-driven providers have entered the market for cross-border retail payments and there have been a number of other innovations aimed at improving the functioning of the market. Given that safe and efficient cross-border retail payments are important for economic growth and financial inclusion, the Bank will be paying closer attention to developments in this market.
- The Bank will have a continuing role to play in identifying whether the payments system is meeting the needs of end-users and whether there are any barriers to cooperative innovation. The NPP was developed to address the gaps in the payments system identified by the Bank during the 2010–2012 Strategic Review of Innovation. More recently, the Bank made a number of recommendations aimed at promoting the timely roll-out of NPP services and the development of new functionality as part of the consultation on NPP access and functionality conducted jointly with the Australian Competition and Consumer Commission. The Bank will be monitoring the industry's progress in addressing these recommendations and supporting ongoing investment in the NPP as a platform for competition and innovation. The Bank will continue to engage with the Australian Payments Council to support it playing an effective role as the strategic coordination body for the development of the Australian payments system.
- Dealing with issues associated with the transition away from legacy payment systems, such as cheques, will also be a focus of the Bank's work. From an efficiency perspective, there will be benefits from proactively managing the decline of the cheque system, and possibly closing it at some point in the future. But this needs to be done in a way that enables the payment needs of remaining cheque users to be met via alternative options. The industry is pursuing a number of initiatives in this area in response to an action plan that was developed by the Australian Payments Council. Aside from cheques, a rapid migration of Direct Entry payments to the NPP could also raise questions about the future of the Direct Entry system at some point.
- Ensuring adequate access to cash during the transition to a 'less-cash' society will be a priority for the Bank. The transactional use of cash has been declining for some time, but cash is still used for a significant share of consumer purchases and some groups of the population remain particularly reliant on it. As cash use falls, financial institutions may reduce their provision of cash services. There

are already some signs of this in the ATM market, where some ATM deployers have begun rationalising their fleets in the context of a sustained decline in ATM use. While some rationalisation of these services may be warranted from an efficiency perspective, policy concerns could arise if it became difficult for people who still rely on cash to access it. The Bank will continue to monitor developments in this area and, at some point, may need to consider additional policy measures to safeguard access to cash.

- The resilience of retail payment systems is becoming increasingly important with the shift towards electronic payments. As people are carrying less cash, an outage of a retail payment system may mean that customers cannot undertake transactions, which disrupts commerce and can erode trust of consumers in electronic payments. Following a sharp jump in outages recently, the Bank will be looking to take additional steps to encourage improved operational resilience. To strengthen transparency and market discipline, the Bank will be working with Australian Prudential Regulatory Authority (APRA) and the industry to develop a standardised set of statistics on operational outages in retail payments to be publicly disclosed by individual institutions. The Bank will also be engaging more closely with retail payments providers on operational risks in retail payments and how these issues are being managed. If operational incidents continue to rise, the Bank could also consider imposing operational resilience standards on operators and participants in retail payment systems, as some other jurisdictions have done.
- Overseeing industry efforts to enhance the security of retail payments and minimise payment fraud will remain a priority for the Bank. As more transactions have moved online in recent years, card-not-present (CNP) payment fraud has grown significantly. Fraud imposes significant costs on merchants and other participants in the payments system, and can undermine confidence in the security of electronic payments. The Bank has therefore been encouraging the industry to take action to mitigate the upward trend in CNP fraud. A new industry framework aimed at strengthening the authentication of online CNP transactions has recently been introduced and the Bank will be monitoring its impact on CNP fraud and determining whether any other actions are required. In particular, the Bank will remain alert to the possible migration of fraud to less protected payment channels. Data security will also become a more pressing issue as the digitalisation of payments and other financial services results in more customer data being stored and shared. There are a range of technology-driven innovations that could help in mitigating fraud, such as tokenisation, biometrics, digital identity and other authentication systems. The Bank will continue to encourage the payments industry to work collaboratively to implement these solutions.

Ensuring the Bank Has the Appropriate Supervision Powers and Oversight Framework for Clearing and Settlement Facilities

Not having the powers to respond appropriately and quickly to a policy problem or crisis at CS facilities is a key policy risk. In 2012, the Council of Financial Regulators (CFR) outlined a set of proposed enhancements to the regulatory regime for FMIs, which included enhanced supervisory powers for the Australian Securities and Investments Commission (ASIC) and the Bank. The envisaged changes include giving the Bank its own enforcement powers to underpin its supervision of CS facilities, rather than the Bank having to request that ASIC issue a direction relevant to the Bank's responsibility for systemic risk. More recently, the International Monetary Fund (IMF) has made related recommendations in its Financial Sector Assessment Program review, including that the legal basis for enforcing corrective actions at FMIs should be strengthened. The IMF recommended that the Bank and ASIC's powers be independent from the Minister.

The Bank and ASIC will be continuing to work on proposals that would address the recommendations of the CFR and IMF. This is likely to involve the development of some legislative amendments, to provide for a set of enhanced powers that would ensure that supervisors of CS facilities have appropriate supervisory and enforcement powers. Stakeholders will be given the opportunity to provide feedback on any significant new proposals, potentially as part of the consultation on FMI resolution powers.

In addition, the potential for the increased cross-border provision of post-trade services, as well as the prospective entry of CS facility start-ups to contest existing markets, has suggested a broad-based review of the Bank's policy approach to ensure that staff resources are suitably directed towards the right risks and issues. CS facility licensees operating in Australia have historically tended to be well established in their operations and either systemically important to Australia or with ambitions to be so. Consequently, while the Bank's approach to supervising and assessing CS facilities was intended to be graduated and proportional to the degree of systemic risk posed to the Australian financial system, in practice, there was little differentiation in the approach taken to different facilities, owing to the similarities in importance of these facilities. An important consideration in the review is to ensure the framework encourages the provision of CS facility services to Australian participants and markets in line with Australian financial stability interests, while also taking advantage of oversight by home regulators with supervisory approaches that are sufficiently equivalent to our own. The results of this review are underpinning some changes to the Bank's policies for supervising and assessing CS facilities that were announced in June. Looking ahead, the staff will be modifying the Bank's supervisory approach to better ensure that the frequency, scope and detail of assessments is proportionate to the degree of systemic risk posed by the CS facility to the Australian financial system and the confidence that the Bank has in oversight of the facility in other jurisdictions, including in cooperative oversight arrangements that the Bank participates in.

Developing an FMI Resolution Regime and Crisis Management Arrangements

The Bank, in cooperation with other CFR agencies, is continuing to develop a resolution regime for FMIs. Importantly, this regime will provide legislative powers for a resolution authority to deal with the failure (or likely failure) of an FMI, consistent with objectives of ensuring continuity of services that are critical to the financial system and the maintenance of financial stability. It is expected that the Bank will be the designated resolution authority for CS facilities. This will be a very significant responsibility, and Payments Policy Department has had a small team working solely on resolution for around two years.

Work is currently focused on finalising the design of the regime, in terms of the powers a resolution authority should have and how it is able to deploy them. While a public consultation on the high-level design of the regime was carried out in 2015, further consultation is planned for late 2019. The focus will then turn to the preparation of draft legislation for subsequent introduction into parliament.

The proposed regime would give the Bank significant new statutory powers that would be utilised quite differently from supervisory powers. The Bank will need to ensure it has the appropriate experience and expertise to run such a regime. Other work would need to be done to develop and test formal crisis management arrangements in the event that resolution becomes necessary.

Retail Payments Regulation and Policy Issues

The Reserve Bank determines policy for retail payments systems and undertakes research into retail payments issues under its remit to promote a safe, competitive and efficient payments system. Recent policy work has focused on: the functionality of, and access to, the New Payments Platform (NPP); operational outages in retail payment services; and strategic considerations in the migration of payment streams to the ISO 20022 payments messaging standard. Policy work has also covered a range of issues related to card payments, including the industry's implementation of least-cost routing functionality for contactless debit card transactions and improving the clarity and operation of some of the Bank's existing regulatory requirements. There has also been an ongoing focus on innovation in the payments system, including the use of distributed ledger technology, digital currencies, and policy issues arising from the entry of non-traditional participants in the payments landscape.

NPP Access and Functionality

In 2018/19, the Bank, with input and assistance from the Australian Competition and Consumer Commission (ACCC), consulted on the functionality of, and access to, the NPP. The consultation was partly in response to recommendations in the Productivity Commission's 2018 Inquiry into Competition in the Australian Financial System and concerns raised by other stakeholders relating to services offered through the NPP and the ways of accessing the platform.

The consultation sought stakeholder views on the current functionality of the NPP and what functionality gaps may exist. It also sought views on whether the various ways of accessing the NPP, and their associated technical and other eligibility requirements, were adequate for different business models, or whether other forms of access or eligibility requirements may be justified. There were 19 written submissions to the consultation from a range of stakeholders and the Bank and ACCC held meetings with stakeholders in Melbourne and Sydney, including with most of those who provided written submissions, as well as ASIC and APRA.

A report on the conclusions from the consultation was published in June and contained 13 recommendations directed at NPP Australia Limited (NPPA) and NPP participants.[13] The overall conclusion was that the NPP was

13 NPP Australia Limited is the company that owns and operates the NPP. For more information, see: NPP Functionality and Access Consultation: Conclusions Paper. Available at <https://www.rba.gov.au/payments-and-infrastructure/new-payments-platform/pdf/functionality-and-access-report.pdf>.

enabling payments functionality that largely addressed the gaps identified in the Bank's 2010–2012 Strategic Review of Innovation. However, the report highlighted that the slow and uneven roll-out of NPP services by the major banks was disappointing and that this had likely slowed the development of new functionality and contributed to stakeholder concerns about access to the NPP. Therefore, the report made a number of recommendations aimed at promoting the timely roll-out of NPP services and development of new functionality.

The consultation also identified a number of access issues that could present potential barriers to entry for new participants. Balancing the potential competition benefits of open access to the NPP against the need to maintain safety and security in a real-time payments platform, the report made a number of recommendations for NPPA to take action in relation to its participation requirements, the required capital contribution for participation and the governance arrangements for assessing new participants.

NPPA published a written response to the consultation on 30 July 2019, explaining how it intends to implement the recommendations and over what time period. NPPA has accepted the 13 recommendations and will address each according to the schedule set out in the report.

The Bank has committed, with the ACCC, to undertake another review of NPP access and functionality commencing no later than July 2021. The Board could consider a regulatory solution if there is insufficient progress in addressing the recommendations in the report, or if other issues arise.

Outside of Australia, there has been significant further progress in the development of other fast retail payment systems. In September 2018, the Hong Kong Monetary Authority launched the Faster Payment System, which supports both HKD and RMB payments, the use of QR codes, and is open to both banks and operators of stored-value facilities (SVFs). In November, the ECB launched its real-time payments infrastructure, Target Instant Payments Settlement (TIPS), which facilitates instant cross-border payments in the EU. In addition, in Northern Europe, the P27 Nordic Payments Platform (owned by a number of large Nordic banks) and Mastercard have announced a partnership to develop a real-time and batch multi-currency payments system across the Nordic region. In the United States, the Federal Reserve Board announced that the Federal Reserve Banks will develop the FedNow Service, a new nationwide real-time gross settlement system (RTGS) to support faster retail payments. The FedNow Service will process transactions 24 hours a day, 7 days a week, and operate alongside existing private sector RTGS services for faster payments. It is expected to be available in 2023 or 2024.

Migration to ISO 20022 Messaging Standard

At its February meeting, the Board discussed the announcement by Society for Worldwide Interbank Financial Telecommunication (SWIFT) of its decision to cease support for some existing message formats used in many payment, clearing and settlement systems around the world, including in Australia. By late 2025, certain of these messages will need to migrate to a new format, which uses the International Organization for Standardization (ISO) 20022 standard (see Box B). The Board identified this as a key strategic issue for the Australian payments system and endorsed the Bank undertaking a consultation with the industry on the key considerations associated with migration to the new standard.

SWIFT is planning to cease support for certain categories of its proprietary Message Type (MT) messaging standards and replace them with ISO 20022 formats, for cross-border and correspondent banking payments, from November 2025. While SWIFT has not yet announced an end date for MT formats used in 'closed user groups' (which includes Australia's High Value Clearing System (HVCS)), its end goal is to fully migrate all payments and reporting traffic to ISO 20022. Given this, and the number of ISO 20022 migration projects underway globally, the Board judged that it was an appropriate time to consider adoption of the ISO 20022 standard in relevant systems in Australia.

Accordingly, in April, the Bank, in collaboration with the Australian Payments Council (APC), released a consultation paper on the key issues relating to ISO 20022 migration. The intention is to ensure that the migration project is undertaken in a timeframe that does not pose risk to the payment system and that appropriately considers the objectives of migration and broader long-term opportunities for the industry. The consultation paper set out the key strategic decisions that would be required for an ISO 20022 migration and invited submissions from stakeholders.

A wide range of submissions were received from industry. There was broad support for the migration and the need for an industry governance process to ensure that the migration occurred smoothly. There was also support for enhancing the data content of messages, although most stakeholders supported an approach of like-for-like migration followed by inclusion of enhanced content. The Board discussed issues relating to ISO 20022 migration at its August 2019 meeting and noted the desirability of maintaining a dedicated high-value payments system and that it was important for the industry to provide adequate resourcing to a migration project, with appropriate project oversight, for example by the APC. The Board also supported the adoption of enhanced content in future ISO 20022 messaging standards. The Bank and the APC published a second consultation paper in September, summarising the initial consultation responses and setting out some proposed options for implementation. A third paper is planned for early 2020, to present the conclusions from the consultation process, including the agreed scope, governance, migration strategy, timetable and implementation approach. It is intended that the migration will be complete by the end of 2024, ahead of SWIFT's migration timeframe and consistent with other international migration projects.

Box B
ISO 20022

Messages used in payments, clearing and settlement systems are often complex and must follow strict protocols so that participants can send and receive the messages with a common understanding of the information they contain. ISO 20022 is an internationally recognised standard that was developed and is maintained by the International Organization for Standardization (ISO). It is a general purpose standard for development of financial industry messaging in payments, securities, trade services, cards and foreign exchange businesses. For payments, the ISO 20022 standard covers messaging related to cash account management, payments initiation, clearing, and settlement.

The general features of the ISO 20022 standard are:

- **Open standard** – the message definitions are publicly available from the ISO 20022 website.
- **Flexible** – definitions can be adapted for new requirements and technologies as they emerge.
- **Enhanced data content** – ISO 20022 messages have an improved data structure (e.g. defined fields) and expanded capacity (e.g. increased field size and support for extended remittance information).
- **Network independent** – the adoption of the standard is not tied to a particular network provider.

Over the past decade there has been an international movement to migrate message formats used in payments, clearing and settlement systems to ISO 20022. Australia's New Payments Platform (NPP) and the Fast Settlement Service (FSS) already use ISO 20022 messages, and this is also the message format being adopted by ASX Ltd as part of its CHESS replacement project (see the chapter on 'Oversight, supervision and regulation of FMIs').

Migration of other relevant systems to ISO 20022 in Australia will be a major undertaking for the industry and will involve a number of interdependencies with banks' internal systems. Accordingly, it is important that migration occurs in a coordinated way that is not disruptive for other payments system participants and end users.

A number of ISO 20022 migration projects are underway globally, often as part of larger infrastructure refreshes. SWIFT estimates that by 2025, nearly 90 per cent of the value and 80 per cent of the volume of high-value domestic payments messages worldwide will use the ISO 20022 format.

For example, the Bank of England (BoE) plans to migrate high- and low-value domestic payment systems by 2024, with the aims of improving resilience, strengthening risk management, reducing fraud, and promoting competition and innovation. To meet these objectives, the BoE will introduce a Common Credit Message across its domestic payment systems.

The US Federal Reserve has proposed a plan for the migration of its Fedwire Funds Service (an RTGS system) by late 2023, to be undertaken in three phases: preparing for ISO 20022 migration, including 'cleaning up' existing message formats; implementing a 'like-for-like' ISO 20022 message (limited to existing content); and then expanding content using the improved data capabilities of ISO 20022. This work will be coordinated with an ISO 20022 migration for the private sector high-value payments system, the Clearing House Interbank Payments System.

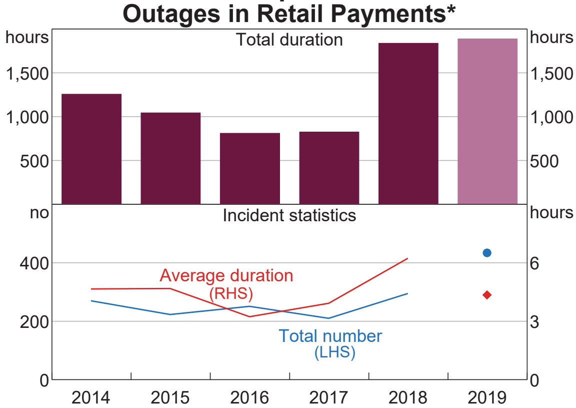
The European Central Bank (ECB) is proposing to have a 'big-bang' implementation of its consolidated TARGET2 and TARGET2 Securities systems in November 2021. Both systems will use ISO 20022 messaging. The key driver for the project is the consolidation of the two systems, though the ECB has also noted the benefits of ISO 20022 supporting extended remittance information.

Operational Outages in Retail Payment Services

Operational outages in retail payment services that impede the ability of households and businesses to send and receive payments can cause significant inconvenience and disruption. With this in mind, the Bank has for some time collected information on retail operational incidents from banks and other financial institutions that use RITS. This information is used to monitor trends in the reliability of retail payment services, and aggregated data are disseminated via Australian Payments Network (AusPayNet) to allow individual institutions to benchmark their operational performance.[14] Where necessary, the Bank also engages directly with institutions to better understand the nature of major retail incidents and the corrective actions being taken.

The Bank's data show a significant jump in retail operational outages in 2018 following a few years of improved performance (Graph 24, top panel). Higher outage time reflected rises in both the number of incidents and the average duration of incidents (that is, the average time taken to restore services) (Graph 24, bottom panel). Nearly all institutions experienced an increase in outage time in the year. By retail channel, around half of the number of service outages in 2018 occurred in either online or mobile banking, whereas outages affecting card payments accounted for around 10 per cent of the total. Some banks also experienced outages affecting their recently launched NPP services. Annualised data for the first half of 2019 indicate that total outage time remains at an elevated level, with a rise in the number of incidents offsetting a decline in their average duration.

Graph 24
Outages in Retail Payments*



* Outages reported by banks and other financial institutions that settle retail payments. Observations for 2019 are annualised outcomes for the first half of the calendar year.

Source: RBA

14 The Bank also monitors incidents where retail payment services are disrupted across numerous financial institutions at the same time – for example, because of an outage in centralised payments infrastructure or at common service providers (e.g. telecommunications networks). These types of incidents are not currently included in the Bank's data collection.

The most common reported cause of outages in 2018 was software failures. Both the number of software failures and the average time taken to resolve them rose sharply in the year. The increasing complexity of IT environments, together with problems stemming from legacy systems, seem to be important factors contributing to rises in the number of operational incidents and the time taken to resolve them.

Ultimately, it is in the interests of financial institutions to ensure their retail payment services are reliable. But institutions may not take into account the adverse effects their outages can have on other payment providers and the customers of those providers. Moreover, with the increasing use of electronic payment instruments and the reduction in use of cash, the operational reliability of retail payment services is becoming more critical to day-to-day economic activity. This issue is also receiving closer attention from central banks and regulators in other jurisdictions

The Board is regularly briefed on trends in operational incidents affecting retail payments. At its May meeting, it discussed the recent sharp rise in outages and the case for the Bank to take additional steps to encourage improved operational resilience. To improve transparency, the Board endorsed the Bank working with APRA and the industry to develop a standardised set of statistics on operational outages in retail payments to be publicly disclosed by the individual institutions.

In addition, the Bank will be engaging more with key retail payments providers on operational risks in retail payments and how these issues are being managed. If operational incidents continue to rise, then the Board could consider imposing operational resilience standards, as some other jurisdictions have done.

Regulatory Framework for Stored-value Facilities

SVFs encompass a range of facilities in which pre-paid funds can be used to make payments. The Council of Financial Regulators (CFR) initiated a review of the regulatory framework for SVFs in Australia in mid 2018. The project is being carried forward by a CFR working group, chaired by the Bank and with representation from APRA, ASIC and Treasury. Over the past year, the Board has been regularly briefed on the progress of this CFR work stream and on SVF policy issues more broadly.

The CFR review has the following broad objectives:

- to identify opportunities to simplify the regulatory framework for SVFs
- to ensure that the regulation of SVFs does not pose an undue obstacle to innovation and competition, while maintaining appropriate levels of consumer protection and system-wide safety
- to identify any changes necessary to enable regulation to adapt to recent and prospective developments in the payments market, including those associated with advances in technology and new participants
- to identify opportunities to improve the 'competitive neutrality' of regulation
- to improve the transparency and clarity of regulation, from the perspective of regulated entities, potential new entrants, and consumers and other users.

The CFR's review addresses recommendations from the Productivity Commission's 2018 Inquiry into Competition in the Australian Financial System and the earlier Murray Financial System Inquiry (FSI). In particular, the FSI viewed the regulatory arrangements for purchased payment facilities (PPF), a type of SVF, as complex and subject to potential regulatory overlap. The Productivity Commission recommended that the CFR review the regulatory framework for PPFs.

In September 2018, the CFR released an issues paper on the regulation of SVFs and invited submissions from interested parties. The consultation received nine written submissions and in November an industry roundtable was convened to discuss the views of stakeholders. Since then, the CFR working group has been developing recommendations on a revised regulatory framework for SVFs. A focus has been on determining an appropriate degree of gradation of the regulatory requirements, taking into consideration the need for adequate consumer protection arrangements. The work is nearing completion – once completed, the conclusions will be provided to the Government for consideration.

Least-cost Routing and Dual-network Debit Cards

Background

Least-cost routing (LCR), also known as merchant choice routing, is an initiative aimed at promoting competition in the debit card market and reducing payment costs in the economy. For merchants, the cost of accepting a debit card payment can vary depending on which network processes the transaction. Dual-network debit cards have access to two networks – the domestic eftpos scheme and one of the two international schemes, Debit Mastercard and Visa Debit. The majority of debit cards in Australia are dual-network, and most payment terminals are able to support contactless functionality for both eftpos and the international schemes. LCR is functionality provided to merchants that allows their contactless dual-network debit card transactions to be routed to whichever network on the card costs them the least to accept.

The Board has long supported the issuance of dual-network debit cards and the provision of LCR functionality to merchants, recognising the benefits they may have for competition and efficiency in the payments system. In recent years, the Black Economy Taskforce, the House of Representatives Standing Committee on Economics and the Productivity Commission have all called for the card acquiring industry to provide LCR functionality to their merchant customers. In May 2018, the Board considered whether formal regulation was required to ensure the provision of LCR functionality to merchants. Based on commitments provided by the major acquirers to develop and roll out LCR functionality, the Board determined that regulation was not required at that time. Over the past year, the Board has been regularly briefed on the industry's progress in providing LCR functionality

Industry progress

While a few smaller acquirers began offering LCR in 2018, progress by the major banks and other acquirers was slower. All four major banks launched their LCR functionality between March and July 2019. There are some key differences in the LCR capabilities offered by acquirers, with some providing a version that enables routing based on transaction size and payment network. This allows routing thresholds for different networks based on the transaction value that maximises merchants' savings from LCR. By contrast, other acquirers have not given merchants this flexibility, reducing the potential cost advantages of routing. In addition, for some acquirers, LCR is not yet available on all the payment terminals they support.

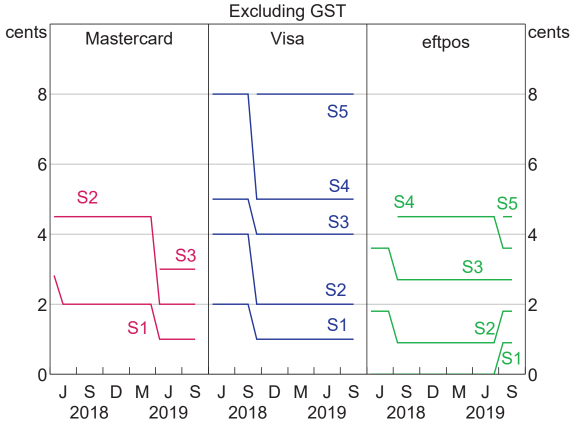
In May, the Board welcomed the industry's progress in providing LCR functionality, but also noted that some acquirers were not actively promoting the functionality to their merchants. The Board noted its expectation that banks would promote this functionality to all their merchant customers. Merchant awareness of LCR is an important factor affecting the degree of downward pressure on payment costs in the economy that can be realised from LCR. This is particularly the case where banks and other acquirers offer LCR to merchants on an opt-in, rather than opt-out, basis, or where they offer LCR only on some merchant payment plans and not others. The Board also stressed that the benefits to competition from LCR should not be prevented by issuers removing networks from dual-network cards.

Competitive pressure on interchange fees

Over the past year, as LCR functionality has been gradually rolled out by banks and other acquirers, schemes have modified their interchange schedules to compete more aggressively for some types of debit card transactions. This has typically taken the form of offering low interchange rates for larger merchants that might be contemplating LCR. All three card schemes have introduced new 'strategic merchant' categories for debit transactions, and the international schemes have reduced their debit interchange rates for all strategic merchant categories (Graph 25). Strategic merchant interchange rates are only available to select merchants, typically those with large card payment volumes.

By contrast, there have been increases in interchange rates for some types of debit transactions where LCR is not an option, such as online transactions and transactions made on single-network (proprietary) cards. For example, Mastercard has increased its interchange rate on some online transactions such that an online-only merchant now faces an interchange fee of 15 cents on all non-tokenised card-not-present (CNP) debit transactions, whereas previously these would have attracted lower rates. Visa has reduced the interchange rate for CNP transactions under $30 but increased rates for those above $30 for select non-strategic merchant categories. In the case of eftpos, it has set a higher interchange rate for transactions on its proprietary cards where transactions cannot be routed to another scheme, though these cards account for a low and declining share of debit cards on issue.

Graph 25
Strategic Debit Card Interchange Rates
Excluding GST



Sources: eftpos; Mastercard; Visa

It is likely that there will be increased adoption of LCR by merchants over the coming period and further actions by schemes to compete for transaction flows at the point of sale. The Board will continue to monitor LCR and the debit market closely, and its forthcoming review of payments regulation (see below) is likely to consider the progress of LCR and examine competition in the debit card market as a whole.

The Bank's Card Payments Regulations

The Bank generally undertakes comprehensive reviews of its regulatory framework for card payments around every five years, guided by the

Board's mandate to promote competition and efficiency in the payments system. This timing represents a good trade-off between providing some degree of stability to the regulatory framework and responding to any policy issues that emerge as the market evolves. The last comprehensive review took place in 2015–16, and resulted in changes to the two interchange standards and the surcharging standard. As discussed further below, the Bank undertook a narrow consultation in 2018/19 focused on the specific aspects of the interchange standard dealing with the payment of 'net compensation' between card schemes to issuers. This consultation resulted in some changes to the interchange standards that took effect from July. The changes were designed to improve the clarity and operation of the net compensation provision and help minimise compliance burden, but did not change the overall policy approach.

The Board has decided to commence the next comprehensive review of the cards regulatory framework in early 2020, with a view to concluding it by the end of the year. This review will look at how the Bank's standards have been working in practice and will consider a range of issues raised by stakeholders. Based on current information, these may include the level of the interchange fee benchmarks and caps, the transparency of scheme and processing fees, competition in the debit card market, the competitive balance between three- and four-party card schemes and the 'no surcharge' rules of buy-now-pay-later services. The Bank intends to publish an issues paper for the review in early 2020 and will consult widely with stakeholders.

Interchange fees

Under the interchange standards, designated schemes must comply with weighted-average interchange fee benchmarks. Compliance is observed quarterly based on transactions in the preceding four quarters. The weighted-average interchange fee benchmark is 0.50 per cent for credit cards, and 8 cents for debit and prepaid cards. These benchmarks are supplemented by ceilings on individual interchange rates: 0.80 per cent for credit cards; and 15 cents, or 0.20 per cent if the interchange fee is specified in percentage terms, for debit and prepaid cards.

In the event that a scheme has exceeded the relevant benchmark, it must reset its interchange fee schedule within two months so that its average interchange fee is below the benchmark (using the transactions of the scheme over the previous four quarters as weights). Schemes can reduce the frequency of required interchange fee resets by setting rates conservatively relative to the benchmark. In practice, however, the international schemes have typically set their credit card interchange schedules in a way that results in upward drift in average interchange rates, and with rates at levels that are as close as possible to the benchmarks.

Card scheme interchange fee resets

In 2018/19, Mastercard and Visa were required to reset their credit card interchange fee schedules in each quarter as their weighted-average credit card interchange fees in each rolling four-quarter period exceeded the benchmark. To bring their interchange fee schedules into compliance, both schemes reduced the rates applicable to 'premium' consumer and commercial card categories during the year (Table 5). Mastercard additionally reduced rates on one of its strategic merchant categories, while Visa lowered rates on certain industry categories. Both schemes also introduced new interchange fee categories during the year: Mastercard introduced new categories for tokenised transactions as part

Table 5: Credit Card Interchange Fees[(a)]
Excluding GST; per cent

Category	Mastercard		Visa	
	July 2018	July 2019	June 2018	July 2019
Charity	0.00	0.00	0.00	0.00
Tokenised Contactless	–	0.80	–	–
Tokenised Online	–	0.18	–	–
Consumer Electronic	–	–	0.21	0.21
Consumer Standard	0.19	0.19	0.21	0.21
Consumer Premium	0.50	0.49	0.70	0.69
Consumer Super Premium	0.80	0.80	0.78	0.60
Consumer High Spend/ High Net Worth	0.75	0.67	0.80	0.79
Strategic Merchant 1	0.18	0.18	0.21	0.21
Strategic Merchant 2	0.23	0.21	0.22	0.22
Strategic Merchant 3	0.25	0.25	0.25	0.25
Strategic Merchant 4	–	–	0.30	0.30
Strategic Merchant B2B	–	–	–	0.50
Commercial Executive/ Super Premium Business/ Corporate	0.80	0.80	0.80	0.80
Commercial/Business	0.70	0.69	0.70	0.69
Business Premium	–	–	0.78	0.75
Industry Specific[(b)]	0.10	0.10	0.25	0.21
Purchasing	–	–	0.80	0.80
Recurring Payments	0.10	0.10	0.21	0.21
Mastercard Initiated Rewards	–	0.00	–	–
Benchmark	**0.500**	**0.500**	**0.500**	**0.500**
Ceiling	**0.800**	**0.800**	**0.800**	**0.800**

(a) Fees are paid by the acquirer to the issuer, except for transactions involving a cash-out component
(b) Fees applying to Government, utilities, insurance, petroleum/service station, education, and supermarket (Visa only) transactions
Sources: Mastercard; Visa

of its efforts to promote more secure online transactions, while Visa introduced a rate for business-to-business strategic merchant transactions.

Weighted-average debit and prepaid card interchange fees remained below the relevant benchmark for all schemes during 2018/19. Although no resets were required for compliance purposes, eftpos, Mastercard, and Visa all made several changes to their debit and prepaid interchange fee schedules through the year (Table 6).

As discussed earlier, some of these changes reflected a competitive response to the rollout of LCR. All schemes introduced new strategic merchant categories and revised their pricing for at least some interchange fee categories relevant to contactless dual-network debit card transactions at non-strategic merchants. Mastercard additionally introduced separate

Table 6: Selected Debit and Prepaid Card Interchange Fees[(a)]
Excluding GST; cents unless otherwise indicated

Category	Mastercard		Visa		eftpos Proprietary		eftpos Multi-network	
	July 2018	July 2019	July 2018	July 2019	July 2018	July 2019	July 2018	July 2019
Charity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Micropayment	2.0	–	–	–	–	–	–	–
Tokenised Contactless (≤ A$15)	–	5.0	–	–	–	–	–	–
Tokenised Contactless (> A$15)	–	15.0	–	–	–	–	–	–
Tokenised Online	–	8.0	–	–	–	–	–	–
Consumer Standard – Card Present	12.5	5.0	0.20%	0.20%	13.6	11.8	4.5	4.5
Consumer Standard – Card Not Present/ Electronic/Digital	12.5	15.0	8.0	8.0	14.5	0.16%	14.5	0.16%
Consumer Premium – Card Present	0.20%	15.0	0.20%	0.20%	–	–	–	–
Consumer Premium – Card Not Present	0.20%	15.0	0.20%	0.20%	–	–	–	–
Transit Contactless	–	6.0	–	–	–	–	–	–
Strategic Merchant 1	2.0	1.0	2.0	1.0	1.8	1.8	0.0	0.9
Strategic Merchant 2	4.5	2.0	4.0	2.0	3.6	3.6	0.9	1.8
Strategic Merchant 3	–	3.0	5.0	4.0	7.3	5.5	2.7	2.7
Strategic Merchant 4	–	–	8.0	5.0	9.1	7.3	4.5	3.6
Strategic Merchant 5	–	–	–	8.0	–	9.1	–	4.5
Business Premium	0.20%	0.20%	0.20%	0.20%	–	–	–	–
Industry Specific[(b)]	–	–	6.0	5.0	–	–	–	–
Purchasing	–	–	6.0	0.20%	–	–	–	–
Recurring Payments	15.0	–	6.0	6.0	–	–	–	–
Mastercard Initiated Rewards	–	0.0	–	–	–	–	–	–
Benchmark	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**	**8.0**
Ceiling	**15.0**	**15.0**	**15.0**	**15.0**	**15.0**	**15.0**	**15.0**	**15.0**

(a) Fees are paid by the acquirer to the issuer, except for transactions involving a cash-out component
(b Fees applying to Government, insurance, transit, service station, education, and supermarket transactions
Sources: eftpos, Mastercard, Payments Australia Limited, Visa

debit categories for tokenised card-present and card-not-present (CNP) transactions, with higher rates applying to non-tokenised CNP transactions; these changes will provide an incentive to merchants to tokenise transactions to reduce fraud risk. Tokenisation of card payments is discussed further in the Technology and Innovation Section.

Net compensation

To prevent circumvention of the interchange fee caps and benchmarks, the standards contain a requirement that issuers may not receive 'net compensation' from a scheme in relation to card transactions. This requirement is intended to limit the possibility that schemes may use payments and other incentives to issuers (funded by higher scheme fees on acquirers) to effectively replicate interchange fee payments. Schemes and issuers certify their compliance with this requirement annually.

The initial certifications against the net compensation requirement were provided in August 2018 and related to the first reporting period that ended on 30 June 2018. This certification process indicated that the 'net compensation' provision was working as intended from a broad policy perspective. However, it also highlighted that there were some issues of interpretation and other areas where minor variations to the standards might be beneficial.

Accordingly, the Bank sought informal views from stakeholders on how the net compensation requirement could be modified to improve its clarity, minimise compliance burden, or otherwise support the operation of the standards, without changing their purpose or substantive effect. In February, the Bank put forward draft variations to the standards for consultation based on this feedback. These variations were later adopted with some modifications made in response to stakeholder feedback, and came into effect on 1 July.

The standards were varied to require the use of an accrual accounting approach in determining net compensation. In addition, the variations clarified the definitions of Issuer Receipts and Issuer Payments, and made it clear that only sponsoring issuers in aggregator arrangements are required to comply with the net compensation provisions.[15] The revised standards also included transitional arrangements to provide issuers with the flexibility to choose which version of the standards to certify against for the 2018/19 reporting period. All entities will be required to comply with the varied standards in subsequent reporting periods.

Companion card arrangements

Under the interchange standards, interchange-like payments and net compensation payments from the scheme to issuers under American Express companion card arrangements are subject to equivalent regulation to those that apply to the Mastercard and Visa credit card systems. Since the relevant part of the standards came into effect in 2017, the four major banks have each ceased issuance of their American Express companion card products. Accordingly, American Express has requested that the Bank revoke the designation of the American Express Companion Card Scheme. The Bank expects to consider this issue as part of its next comprehensive review of card payments regulation. In the meantime, the Bank has provided a letter to American Express setting out a reduction in reporting requirements for periods where there are no companion cards on issue.

Surcharging

The Bank's surcharging standard, which was revised in 2016, protects the right of merchants to impose a surcharge on payments made using cards from designated schemes, but limits the amount of any surcharge to what it costs the merchant to accept a card payment within each scheme. In addition, acquirers and payment facilitators are required to provide merchants with easy-to-understand information

15 Aggregator arrangements are those in which an aggregator, also known as a sponsor, has a direct relationship and contract with a scheme and handles particular scheme-related services and obligations on behalf of a number of (typically) smaller financial institutions.

on the cost of acceptance for each designated scheme to help merchants in decisions regarding surcharging. These requirements are complemented by powers given to the ACCC to monitor and enforce the ban on excessive surcharging.[16]

The ACCC has indicated that there has generally been good compliance with the surcharging framework, particularly by large merchants. However, the ACCC has investigated a large number of complaints of alleged excessive surcharging and has taken formal enforcement action against five businesses since the excessive surcharging provisions took effect in September 2016.

Payment Card Fraud

Bank staff regularly brief the Board on developments in payment card fraud in Australia, consistent with the Board's mandate to promote an efficient payments system. As noted in the chapter on 'Trends in Payments, Clearing and Settlement Systems', there has been a high and rising level of fraud in CNP transactions over recent years, associated with the rise in online commerce. Fraud imposes significant costs on merchants and other participants in the payments system, and can undermine confidence in the security of electronic payments. For this reason, the Board has identified CNP fraud as a priority issue for the industry to address.

In recent years, the industry has been pursuing various initiatives to tackle the rise of CNP fraud. This includes initiatives focused on protecting sensitive card data from being stolen, including by upgrading security where merchants hold card data, tokenizing card details (replacing card information with unique digital identifiers in transactions) and improving fraud detection tools (such as those that allow for real-time fraud identification).

In addition, the industry, led by AusPayNet, has recently developed a coordinated framework aimed at reducing CNP fraud. The framework, which came into effect in July 2019, requires issuers and acquirers to meet minimum requirements to authenticate online CNP transactions and to keep fraud rates below industry-agreed benchmarks. A key feature of the framework is a requirement for strong customer authentication (SCA) in CNP transactions acquired in Australia when merchants and issuers consistently exceed certain specified fraud thresholds. SCA involves verifying that the person making the transaction is the actual cardholder using two or more independent authentication factors drawn from: something that only the customer should possess (e.g. a card or mobile device); something only they should know (e.g. a PIN or password); and something the customer is (e.g. a biometric feature such as a fingerprint).

Under the framework, certain 'low risk' transactions are exempted from SCA requirements, including recurring transactions, digital wallet transactions, and 'trusted' customer transactions (where the customer has previously been authenticated by the merchant). Acquirers are responsible for monitoring and reporting on merchant fraud rates and ensuring merchant compliance with the framework. Issuers also have responsibilities to facilitate SCA for online CNP transactions when their fraud rates exceed specified issuer thresholds. The framework has been incorporated into a self-regulatory code governed by AusPayNet, and breaches of the requirements by issuers or acquirers can result in mandatory SCA for all CNP transactions and possible fines.

16 For an overview of the surcharging framework see: Dark C, C Fisher, K McBey and E Tellez (2018) 'Payment Surcharges: Economics, Regulation and Enforcement' RBA *Bulletin*, December, viewed 16 August 2019. Available at <https://www.rba.gov.au/publications/bulletin/2018/dec/payment-surcharges-economics-regulation-and-enforcement.html>.

The Board has strongly supported the industry's development of the CNP fraud mitigation framework and Bank staff will be closely monitoring the implementation of the framework and its impact on CNP fraud. Under the framework, issuers and acquirers must report to AusPayNet on fraud rates and fraud rate breaches; the first data for the June quarter 2019 were provided in mid July. Over time, as SCA becomes more common and familiar to cardholders, there may be scope to reduce the thresholds for mandatory SCA in order to put further downward pressure on CNP fraud. The Bank will continue to monitor trends in payment fraud and will consider whether there are any other actions it can take to help facilitate or encourage industry initiatives to address payment security.

AusPayNet's framework is similar to standards that will come into force in Europe in September 2019 under the revised EU Payment Services Directive 2 (PSD2).[17]

The European standards are less flexible and stricter than the AusPayNet requirements, with SCA required for all CNP transactions (subject to certain exemptions, such as low-value transactions under €30), rather than only being required in response to continued breaches of fraud thresholds. International transactions – those involving either an issuer or acquirer located outside Europe – are not subject to PSD2 SCA requirements.

Digital Identity

The Board has strongly supported work led by the APC to facilitate development of digital identity services in Australia, given the potential for these services to deliver significant security and efficiency benefits for Australia's increasingly digital economy. In June, the APC reached a significant milestone by completing the first version of a 'TrustID' digital identity framework. The Bank, in its capacity as an APC member, was involved in the development of the framework and, along with other participants, helped fund the project.

The TrustID framework sets out various requirements to facilitate the emergence of an interoperable network of competing digital identity solutions in Australia. The framework is designed to allow individuals to establish their digital identity online with a preferred service provider and then to use those credentials to prove who they are when interacting online with businesses, including when making online payments. In addition to potentially reducing fraud, it is anticipated that digital identity services will emerge that will improve the convenience and security of many online interactions, enhance privacy and data security, and reduce costs related to identifying customers, such as those associated with 'know-your-customer' processes.

The APC has worked with the Government's Digital Transformation Agency (DTA) to ensure that the TrustID framework is compatible with the DTA's Trusted Digital Identity Framework (TDIF), which establishes the requirements for participation in the Government digital identity system currently under development. For example, the intention is that a digital identity established by a private sector provider under the TrustID framework will eventually be able to be used to access Government services, and vice versa.

The Board has been encouraged by the APC's progress in developing the overarching framework for digital identity, and looks forward to participants continuing to collaborate, where

17 The European Banking Authority has allowed that, on an exceptional basis and to avoid unintended negative consequences, national authorities may grant limited extensions to the implementation deadline to give some firms, such as e-merchants, more time to prepare for the new rules. Extensions have been granted in a number of countries including the United Kingdom and France.

necessary, on its development. The Board is also hoping the framework will spur the launch of digital identity solutions in the Australian market that can start to address some of the challenges of identity verification in a digital economy.

Declining Cash Use

Cash use in Australia has been declining for some years now and so the Board has considered the drivers of this trend and the policy issues that might arise if it continues. The shift away from the use of cash to electronic payment methods for everyday transactions has been occurring because many Australian households and businesses are increasingly finding that electronic payments are better meeting their payment needs. To date, there are no indications that the shift reflects merchants no longer accepting cash or banks no longer providing households and businesses with appropriate access to cash.

In assessing the potential policy issues related to cash access and use (including those related to the ATM system, discussed below), the Bank has drawn on insights from developments in other countries. The issue is particularly relevant in Sweden and Norway where the decline in cash use for everyday transactions is significantly more advanced than elsewhere. The authorities in these countries are concerned about the speed of the shift away from cash and have been considering policy responses, in part to avoid a situation where parts of the population wish to continue to use cash but are unable to do so because of the withdrawal of infrastructure around cash distribution and use. In Norway, the Government has introduced legislation to require banks to provide cash services to customers, and similar requirements have been proposed in Sweden. Sweden's central bank is also considering issuing an e-krona to ensure that, in the event that cash disappears as a payment method, households and businesses continue to have access to a form of central bank money, to provide competition for privately provided payment methods, and to increase the resilience of the payments system.

In the United Kingdom, the United States and New Zealand, where transactional use of cash is still significantly higher than in the Nordic countries, authorities are also considering potential policy responses to declining cash use. In the United Kingdom, the Chancellor of the Exchequer has announced a Joint Authorities Cash Strategy Group, comprising the country's financial sector regulators, to 'consider how best to ensure access to cash for those who need it'. In the United States, authorities in San Francisco, Philadelphia and New Jersey have banned cashless stores, citing discrimination against low-income consumers who may not have access to credit or debit cards. Closer to home, the Reserve Bank of New Zealand released an issues paper earlier this year on the Future of Cash Use, and will be leading a review of the cash distribution system in the context of expected further declines in cash use.

Issues in the ATM System

In addition to considering the broad policy issues that could emerge in the future in relation to cash access and use, the Board has continued to focus on a number of issues relating specifically to the ATM industry. The number of ATMs in Australia has declined further over the past year, as a number of banks and other deployers have continued to rationalise their ATM fleets. The rationalisation reflects the changing economic incentives of owning and operating ATMs in an environment of declining cash use for transactions. The 2017 decision by many banks to remove their ATM fees further strengthened the incentives for these deployers to reduce or consolidate their fleets. Notwithstanding the reduction in the number of ATMs, recent analysis by Bank staff suggests that the vast majority of Australians currently have good access to cash withdrawal and deposit services through bank branches, ATMs and Australia Post 'Bank@Post' facilities (See Box A).

Further consolidation or fleet rationalisation may be warranted as a way to improve the efficiency and sustainability of the ATM industry, though policy concerns could arise if there was a significant decline in ATM coverage that made it difficult for people to access cash, particularly in remote or regional locations. The Bank is aware that some bank deployers have been considering the possibility of pooling their off-branch ATM fleets into some form of jointly owned or outsourced utility. The Bank has indicated that it would have an open mind to arrangements such as these if they help to sustainably maintain broad ATM coverage.

During the past year, the Bank has also continued to engage with ATM industry participants on the future of the ATM access reforms that were introduced in 2009. The reforms were designed to increase competition in the ATM industry by making it easier for new deployers to establish the bilateral connections that were required at that time to become a direct participant in the ATM network. The reforms were also designed to make the pricing of ATM transactions more transparent by allowing ATM owners to set their own fees and compete directly for transactions. These aims were achieved through a combination of an ATM Access Regime imposed by the Bank and an industry-administered ATM Access Code

There have been a number of changes in the ATM industry over the past decade that are relevant to the question of whether the current access framework should be maintained. One of these is the development of ATM network switches and other hub-based infrastructures that have reduced the reliance on bilateral connections and made it easier and cheaper for new entrants to join the ATM system without necessarily having to establish bilateral connections with all other direct participants. Another is the decline in the use of ATMs associated with the reduced use of cash for transactions, which has recently prompted many deployers to begin rationalising their ATM fleets. While there may be further changes in the structure of the ATM industry over the next few years, possibly associated with the establishment of an ATM utility or banks outsourcing their ATM fleets, it seems less likely that there will be new entrants wishing to join an industry that is more likely to shrink than expand in the future. The policy rationale for focusing on ATM access is therefore likely to shift from encouraging competition from new entrants to ensuring that the existing industry structure is able to adapt in a way that will promote the efficient and sustainable provision of ATM services across the country.

Against this background, the Bank has recently consulted with industry participants on the future of the ATM Access Regime and Access Code. The Board has previously indicated that it would be open to the possibility of removing the Access Regime if the industry was able to demonstrate that it could deal with any remaining access concerns on its own. While a number of participants supported removal, some others preferred to keep the Access Regime in place for the time being, mostly because it is seen as supporting the ability of existing participants to retain or change their direct bilateral connections on fair and transparent terms. Without the Access Regime, there is a risk that participants might be forced to change how they connect in ways that could undermine competition or that it could become more difficult for the industry to adapt in ways that might help support the sustainable provision of ATMs. The Board discussed these issues at its August meeting and agreed that while the policy case for retaining the ATM Access Regime was not as strong as when it was introduced, the Access Regime still served a useful purpose in ensuring reasonable access to the ATM network in an environment where there is no single centralised connection hub.

Accessibility of Retail Payments

During the past year, the Board has considered a number of issues associated with the impact of new technologies on the accessibility of retail payments. A particular focus has been on the challenges that people with vision and/or motor impairment face when using payment devices that require PIN entry on a touchscreen without physically distinguishable keys. Devices such as these have become more common in recent years as they offer enhanced capabilities for merchants and an improved user experience for the majority of cardholders. However, given the accessibility challenges they raise, the Bank has welcomed the work of AusPayNet in developing best practice accessibility guidelines for payment terminals. These guidelines recommend that all touchscreen terminals incorporate an accessibility mode and they describe a number of common features that accessibility modes should incorporate. While the guidelines do not specify a single approach to accessibility, they are aimed at encouraging a more consistent experience for people with vision and/or motor impairment. Over the longer-term, the wider adoption of mobile devices with biometric authentication technologies (such as fingerprint or facial recognition incorporated into smartphones) could also help overcome some of the accessibility challenges posed by touchscreen terminals. As the use of cash continues to decline, the Board believes it is important that all Australians have access to convenient and secure electronic payment methods. The Bank will continue to monitor how the payments industry deals with accessibility challenges of touchscreen payment terminals and any other accessibility issues that may arise.

Technology and Innovation

The Bank monitors developments in technology and innovation relevant to the payments system, and staff periodically brief the Board on these developments and their implications for safety, efficiency and competition in the payments system. Some of these developments were discussed in the chapter on 'Trends in Payments, Clearing and Settlement Systems'. Over the past year, the Board has considered a number of policy issues related to technology and innovation in the payments system.

To inform its work on innovation in payments, the Bank regularly engages with a range of industry participants, including potential new entrants, representatives from industry groups and technology providers. The Bank also engages with other domestic regulators in relation to payments innovation, both informally and through formal channels. For example, the Bank is an observer on ASIC's Digital Finance Advisory Panel and chairs the CFR Regulatory Perimeter Working Group. The Bank also chairs a CFR Working Group on Distributed Ledger Technology (DLT) with representatives from ASIC, APRA, Treasury and AUSTRAC. The Bank regularly communicates with other central banks about their work in the area of payments innovation, and participates in relevant work streams of the international standard-setting bodies. For example, the Bank is a member of a Committee on Payments and Market Infrastructures (CPMI) Working Group on Digital Innovations, and a member of the Financial Stability Board's Financial Innovation Network, which considers the financial stability implications of financial sector innovations, such as those related to crypto-assets and the involvement of big technology companies ('BigTech') in financial services.

Innovation in card payments

Over recent years, the ways in which consumers can initiate payments over the card networks has expanded. While in the vast majority of cases, card transactions still involve tapping or dipping a physical plastic card, transactions that use card credentials stored electronically on mobile devices such as smartphones are becoming more popular. This trend is likely to continue over the coming years as more card issuers in Australia are beginning to support the use of their cards in third-party digital wallets like Apple Pay. Wearable payment devices – including smart watches, rings and bracelets – have further expanded the range of devices through which card payments can be initiated. The take-up of these new payment options may reflect the additional functionality, convenience and/or security they offer relative to physical plastic cards. These developments may also have implications for competition in the card payments system. For example, competitive pressure in the debit card market would be weakened if only one network from dual-network debit cards was able to be provisioned in a digital wallet. More generally, the Bank has indicated that it would be concerned if, as plastic cards are supplemented by a variety of other means of accessing a customer's account, any actions are taken by schemes or scheme participants that have the purpose or effect of diluting or preventing competition between networks, by removing choices previously available to cardholders and merchants.

The international card schemes have also introduced a number of innovations aimed at improving the security of online (card-not-present) transactions, including expanding the use of their tokenisation services to online transactions. In this context, tokenisation refers to the process of replacing sensitive card data (such as the number on the front of a card) with another number, referred to as a token, which may only be able to be used in certain circumstances (for example, at a specific merchant). During a payment authorisation, the token is converted back to the card information by a 'token service provider', usually provided by the card scheme. In an online context, this can improve security by allowing merchants to only store tokens rather than actual card details. If the tokens are stolen, they are less likely to be able to be used fraudulently. Besides the international card schemes, a number of other entities in the card payments ecosystem (such as payment gateways) provide tokenisation services. The Board is supportive of industry efforts to improve payments security and reduce fraud. However, similar to other innovations in payments, tokenisation – particularly when provided by a scheme and not interoperable with other networks on a card – can potentially have implications for competition in the payments system. In March, the Bank reminded industry participants that it would be concerned if scheme rules or policies on tokenisation limited the ability of merchants to choose to route card-not-present transactions through their preferred network.

New entrants and new business models

As noted in the 'Trends in Payments, Clearing and Settlement Systems' chapter, new players and new business models are changing the payments landscape. These include the emergence of 'buy now, pay later' (BNPL) services, the growth of mobile wallet applications and the associated increased use of mobile devices like smartphones for payments, and the entry of new tech-focused firms into the international money transfer sector.

The Bank will consider the policy implications associated with the growth of new entrants and new business models as part of the forthcoming comprehensive review of card payments regulation (see above). For example, BNPL services are relatively expensive for merchants to accept and they usually restrict the ability of merchants to apply a surcharge to pass on these costs to the customers that directly benefit from the service. Accordingly, an issue for the Bank is whether policy action in relation to these no-surcharge rules should be considered.

A number of other jurisdictions have begun, or are also planning, to review aspects of their regulatory arrangements in response to recent changes to the payments landscape, including the emergence of new business models and non-traditional participants. In June, the Bank of England (BOE) published the Future of Finance report, which recommended that UK payments regulation should be reviewed in light of the potential risks posed by new entrants (particularly technology companies) with new business models to the industry. The UK Chancellor endorsed this recommendation and announced a Treasury-led Payments Strategy Review that will evaluate: the appropriateness of the regulatory framework; how to ensure effective supervision of the overall payments value chain; the role of data-sharing between platforms and payment companies; and ways to reduce fragmentation and complex regulation in the United Kingdom. In Canada, the Government has proposed legislation to implement a new retail payments oversight framework that would require payment service providers to establish operational risk management practices and to protect users' funds against losses. In Singapore, a new Payment Services Act was passed in early 2019 that is intended to account for new developments in payment services and their risks. Broadly, the new legislation gives the Monetary Authority of Singapore (MAS) the power and responsibility to oversee payment systems and to license and regulate payment service providers. The legislation also expands the scope of regulatory supervision to crypto-assets ('digital payment token service'), stored-value facilities ('e-money issuance service') and exchange services ('money-changing services'). The MAS has been consulting on the regulations it will issue under this legislation, with the regulations expected to take effect later this year.

Access to Exchange Settlement Accounts

The Bank's policy on access to Exchange Settlement Accounts (ESAs) was liberalised in 1999, including to allow non-ADI providers of third-party payment services to apply for an ESA to settle clearing obligations with other providers. A small number of non-ADI payment service providers (PSPs) currently have ESAs. In recent years, a number of other central banks have also extended settlement account access to non-bank PSPs, but in most cases access is only available to entities that are regulated by a relevant supervisory authority within the central bank's jurisdiction.

In recent years, developments in technology have allowed a wider range of non-ADI entities (including 'fintechs') to compete directly with banks in the payments system. As a result, the number of entities applying for or enquiring about ESAs has increased. Given this increased demand, the Bank recently reviewed its ESA Policy and determined that a range of changes would be appropriate to provide more information about the eligibility requirements and application process, including the risk management criteria applicants would be required to meet. In July, the Bank published its updated ESA Policy. The main changes to the Policy include:

- requirements for an applicant to demonstrate an adequate understanding of the liquidity management, operational and business continuity requirements for operating an ESA, including the impact that the applicant's operational, liquidity and business continuity arrangements have on other RITS members
- a requirement for an applicant's description of its business model to include a complete and accurate description of the types of customers it has and the types of activity that it provides payment services for. In addition, the application must include an attestation that the applicant complies with all applicable laws in Australia and in any other jurisdiction in which it provides payment services
- a provision for the Bank to commission a report relating to the conduct and standing of the applicant, or its directors, key management personnel, shareholders or other related entities
- that as part of the application process, or as a condition of approval, the Bank may require an applicant to obtain, at its own cost, a report from an independent expert approved by the Bank assessing the applicant's policies and procedures related to sanctions and AML/CTF, and the applicant's compliance with sanctions and AML/CTF legislation and other regulatory requirements
- that the Bank retains the discretion to decline an application where, in its view, the provision of an ESA would adversely affect the reputation of the Bank.

These changes seek to ensure that the ESA Policy continues to promote competition in the market for payment services by providing access to ESAs for non-bank PSPs, while also ensuring that operational, liquidity and other risks are appropriately managed. Additional changes to the ESA Policy were also made in relation to the requirements for clearing and settlement facilities; these are discussed in the ESA policy section of the 'Oversight, Supervision and Regulation of Financial Market Infrastructures' chapter.

The Bank's Innovation Lab

In late 2018, the Bank established a small in-house Innovation Lab as a way to engage with and improve understanding of new and emerging technologies that are relevant to its policy and operational responsibilities. The Innovation Lab will help the Bank to more efficiently and rapidly build knowledge and capabilities in emerging technology areas and to respond more nimbly to changing technology trends and priorities. The intention is that the Innovation Lab will be used for targeted and relatively short-duration research 'projects' or experiments. For example, the Innovation Lab has been used as a dedicated space for a cross-functional team to collaborate in the Bank's continuing research on central bank digital currencies (CBDC).

The Bank has been exploring whether there is a role for a digital Australian dollar (that is, an Australian CBDC) in the context of its responsibilities for issuing the currency and overseeing the payments system. As has been discussed on other occasions, the Bank does not presently consider that there is a strong case to issue a digital currency for retail (or household) use. There are a range of safe and convenient electronic payment methods already available to households, with the NPP now providing additional capabilities, and it is not clear that there would be strong demand for a CBDC as a means of payment. However, the Bank has been exploring some of the technological and policy implications of a wholesale settlement token based on distributed-ledger technology that could be used in transactions between financial institutions and other wholesale market participants.

Crypto-assets

The Bank also monitors market developments in relation to private crypto-assets. As noted in the chapter on 'Trends in Payments, Clearing and Settlement Systems', Bitcoin and the large number of crypto-assets that have launched after it have not become widely used as a means of payment for a number of reasons, including the volatility of their prices. Recently, there was an announcement from Facebook and a consortium of other organisations including Visa and Mastercard that they were planning to launch a 'global cryptocurrency' called Libra.[18] Facebook also announced the establishment of a subsidiary called Calibra that is intended to provide payments services for Libra, and which would give it the potential to access Facebook's 2.4 billion users worldwide, including 15 million active users in Australia. While Facebook is planning for Libra and Calibra to launch in 2020, it is not clear how realistic this is given that various technical, operational and regulatory issues still appear to be unresolved.

In August 2019, the Board had a preliminary discussion of the potential policy and regulatory implications that may arise from the launch of a crypto-asset like Libra and services related to it. The Board noted that there was only a limited amount of information available on the proposed crypto-asset. These issues are also being discussed by other regulators at both a national and international level, and the Bank is participating in a number of cross-regulator discussions. The Bank will continue to monitor developments in relation to Libra and work with other regulators to identify and address any policy issues that may arise. The Board noted that any policy issues identified by Australian regulators are likely to overlap with those raised by regulators in other jurisdictions, and that accordingly, the proposal – and any others of a similar nature –will be subject to considerable scrutiny ahead of any launch.

18 Some crypto-assets are commonly referred to as cryptocurrencies. This is often the case where the crypto-asset has been designed to be used for payments. However, it should be noted that, while commonly used, the term cryptocurrency is not the best descriptor as 'currency' is often thought as being synonymous with money and no cryptocurrencies currently have the key attributes of money.

Oversight, Supervision and Regulation of Financial Market Infrastructures

Financial market infrastructures (FMIs) are institutions that facilitate the clearing, settlement, and recording of financial transactions. The Bank has a role in overseeing and supervising three types of FMIs: central counterparties (CCPs) and securities settlement facilities (SSFs)[19] – together referred to as clearing and settlement (CS) facilities – as well as systemically important payment systems (SIPS).

The Bank's Regulatory Regime for FMIs

The Corporations Act 2001 (the Corporations Act) 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 Reserve Bank Act), 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 SIPS.

CS facilities

The scope of the licensing regime for CS facilities is set out under Part 7.3 of the Corporations Act, with CS facilities operating in Australia required to be either licensed or exempted. This requirement applies to CS facilities incorporated both domestically and overseas. Licensee obligations are specified in the Corporations Act and administered by the Australian Securities and Investments Commission (ASIC). Supplementary conditions may be imposed on CS facility licensees by the responsible Minister; compliance with these obligations is overseen by ASIC and the Bank. In particular, the Bank is responsible for:

- providing advice to the Minister regarding applications for CS facilities, variations to, or imposition of, conditions on licences, or the suspension or cancellation of licences
- determining Financial Stability Standards (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 its obligation under the Corporations Act and, to the extent that it is reasonably practicable to do so, complying with these Standards and doing 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.

19 Referred to internationally as securities settlement systems.

Financial Stability Standards

The Bank has determined two sets of Standards – one for CCPs and one for SSFs.[20] 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 facility, and conduct their affairs in order to promote the 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 by the Committee on Payments and Market Infrastructures (CPMI) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) in the *Principles for Financial Market Infrastructure (PFMI)*. The PFMI are designed to ensure that the FMIs supporting global financial markets are financially, legally and operationally robust. The overall objective is to ensure that FMIs promote stability and efficiency in the financial system. A peer review conducted by CPMI and IOSCO in 2015 concluded that the Bank has implemented the PFMI in a consistent or broadly consistent manner for the FMIs that it supervises or oversees.[21]

In recent years CPMI and IOSCO have developed additional guidance on a number of aspects of the PFMI, which the Bank applies in interpreting its Standards.[22] This guidance seeks to enhance FMI risk management practices by providing further clarity and detail on the existing requirements within the PFMI. For example, the guidance covers areas of emerging risk or areas in which CPMI and IOSCO had 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.

There were no changes to the Standards or associated guidance during 2018/19.

ESA Policy

Under the Bank's ESA Policy, CCPs or SSFs that hold an Australian CS facility licence are eligible to apply for an ESA for the purpose of managing payment arrangements that require Australian dollar settlement.

The Bank requires some firms to use an ESA for specific purposes, and has recently widened the range of CS facilities that must use an ESA for settlement of Australian dollar obligations. Until recently, only CCPs that the Bank determines to be systemically important in the Australian financial system have been required to use their own ESA to settle Australian dollar margin-related receipts or payments and the CCP's Australian securities or derivative-related obligations. It is now the Bank's policy that any Australian-licensed SSF that the Bank determines to be systemically important and that faces liquidity risk from securities settlement related activities must hold their own ESA.[23] The purpose of broadening the range of institutions that must use an ESA for settlement of Australian dollarobligations is to minimise the risks faced by these SSFs and therefore minimise the risks that could be transmitted to the Australian financial system.

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

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

22 For the full list of guidance that the Bank has adopted see the notes to the Financial Stability Standards at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/>.

23 See the Bank's media release at <https://www.rba.gov.au/media-releases/2019/mr-19-19.html>.

A second change to the Bank's ESA Policy has been made to allow holders of an Australian CS facility licence to be eligible to apply for an exemption from the requirement to maintain management and resources in Australia, subject to having appropriate management and operational resources in an approved offshore location. Such exemptions would be determined on a case-by-case basis, at the Reserve Bank's discretion, and would be reviewed periodically. The purpose of this change is to encourage licensed CS facilities to consider using an ESA and to accommodate CS facilities that have sufficient capacity to manage their ESA in a location outside Australia.

The ESA Policy has also been updated to address issues arising from increased demand for ESAs from other types of non-ADIs. These are outlined in the 'Retail Payments Regulation and Policy Issues' chapter.

The 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 outlined in Box C. In carrying out these activities, the Bank works closely with ASIC.

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 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, typically four to six weeks before Board meetings, and deals with matters by written procedure as needed. Staff of Payments Policy Department provide reports to the Board on the Bank's oversight and supervisory activities.

Box C

Approach to the Supervision and Oversight of FMIs

In June 2019, the Bank updated its policy statement describing its approach to supervising and assessing CS facility licensees, and published a corresponding policy statement on its oversight and supervision of SIPS.[1] These policy statements provide transparency to current or potential future operators of CS facilities and SIPS on the frequency, scope and level of engagement between the Bank and its overseen or supervised FMIs.

Clearing and settlement facilities

The changes to the Bank's policy statement on supervising and assessing CS facility licensees has sought to align the frequency, scope and level of detail of assessment of a CS facility licensee to be proportionate with the degree of systemic risk posed by the CS facility to the Australian financial system.

A key principle embedded in the Bank's approach is that all CS facility licensees should meet the Standards and do all other things necessary to reduce systemic risk. The Bank conducts and publishes an initial assessment of prospective licensees against the Standards at the time of their licence application. On an ongoing basis, all CS facility licensees are required to carry out and publish biennial self-assessments against the Standards, and provide the Bank with timely information on material business developments, and operational and risk data. The Bank may set regulatory priorities for these facilities, and report its assessment of progress in these areas.

As CS facilities become progressively more important to the Australian financial system, the frequency and degree of interactions with management at the CS facility and Bank staff is expected to increase, alongside data requirements and assessment obligations. More important CS facility licensees may be subject to targeted assessments against individual Standards at the Bank's discretion. A systemically important CS facility operating under an overseas licence would be subject to an ongoing assessment (by the Bank or its home overseer) against the Standards over a rolling four year period, with certain standards reviewed more frequently depending on market and business developments.[2] A systemically important CS facility operating under a domestic licence would be subject to a full assessment against the Standards at least every two years (annually in the case of CCPs) since the Bank is the primary regulator (with ASIC) of such a facility.

The Bank's supervisory approach for overseas licensees allows for deference to the primary regulator when the supervisory regime in an overseas CS facility's home jurisdiction is sufficiently equivalent to that in Australia and there are satisfactory information-sharing and cooperation arrangements with the relevant overseas authorities. The Bank will use its discretion in determining how much reliance it will place on reports and reviews conducted

1 Available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/approach-to-supervising-and-assessing-csf-licensees.html> and <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/high-value-payments/policy-statement-on-supervision-and-oversight-of-systemically-important-ps.html>.

2 The Corporations Act provides for two classes of CS facility licence: a 'domestic' licence granted under s824B(1); and an 'overseas' licence granted under s824B(2).

by overseas regulators and its own direct assessment of the CS facility.

At present, there are six CS facilities licensed to operate in Australia that are currently required to meet the Standards.[3] The four ASX CS facilities have been classified as systemically important CS facilities operated under a domestic licence; the UK-based LCH Limited (LCH Ltd) has been classified as a systemically important CS facility operated under an overseas licence; and the US-based Chicago Mercantile Exchange Inc. (CME) has been classified as being supervised under the base level requirements. There are presently no licensed CS facilities that are expected to meet the requirements for important CS facilities.

Systemically important payment systems

The Bank's policy statement on its approach to the supervision and oversight of SIPS sets out the criteria used to judge the systemic importance of payment systems in Australia, and describes how its approach differs between domestically focused and international SIPS. The policy statement also addresses a recommendation made in the International Monetary Fund's (IMF's) recent Financial Sector Assessment Program report on Australia (see Box E).

- *Systemic importance*. The Bank carries out an annual review of payment systems based on criteria reflecting the level of activity in the system, the type of payments the system is used for, and other factors that indicate the system's potential to trigger or transmit systemic disruption. If the Bank's annual review identifies that a payment system has become systemically important, the Bank will commence supervision or oversight of that SIPS against the PFMI. The Bank will also engage at an early stage with any payment systems that have the potential to become systemically important so that they are aware of the Bank's policy on the supervision and oversight of SIPS.[4]
- *Domestically focused SIPS.* A SIPS is considered domestically focused if it is operated by an Australian company or its operational base is in Australia, or if the focus of its activities is on AUD payments or Australian participants. The Bank will directly gather information from that SIPS on its compliance with the PFMI and carry out a detailed annual assessment of compliance at least every two years. To date, the Bank considers that the Reserve Bank Information and Transfer System (RITS) is the only domestically focused payment system that is systemically important.
- *International SIPS*. Where payment systems are systemically important in Australia but are based overseas, and are primarily used to effect cross-border payments (including in Australian dollars), the Bank will place reliance on the international SIPS's overseas regulator if certain conditions are met. These conditions consider whether: the SIPS is subject to the PFMI (or equivalent) in its principal place of business; the SIPS has complied with the requirements imposed by the overseas regulator; and the Bank has effective cooperation and information sharing arrangements with the overseas regulator. CLS Bank International (CLS) is currently the only international SIPS overseen by the Bank.

3 In addition, IMB Limited, an Australian building society, operates a market for trading in its own shares by its members, and an associated SSF to settle these trades. IMB Limited's SSF is currently exempt from the Standards owing to its small size. Further details on the exemption to the SSF Standards for SSFs that settle less than $200 million of transactions in a financial year are available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/securities-settlement-facilities/2012/introduction-standards.html>.

4 Assessments of RITS against the PFMI are carried out annually.

The following summarises activity and material developments over 2018/19 for the six CS facilities and the SIPs systems overseen and supervised by the Bank.

ASX

The four domestic CS facility licensees required to meet the Standards are all part of the ASX Group. In September 2019, the Bank published its latest assessment of these facilities.[24] This assessment concluded that the CS facilities 'observed' all relevant requirements under the Standards, with the following exceptions: all four CS facilities were upgraded from 'partly observed' to 'broadly observed' against the operational risk standard, downgraded from 'observed' to 'partly observed' for the general business risk standard, and maintained a rating of 'broadly observed' for the governance standard; both CCPs maintained a rating of 'broadly observed' against the liquidity risk and credit risk standards; ASX Clear (Futures) maintained a rating of 'broadly observed' against the margin standard. The steps taken by ASX to address the Bank's regulatory priorities for the annual assessment period ending June 2019, as well as other material developments, are set out below.

Operational risk management

Building Stronger Foundations

In 2018, ASX commenced a three-year program, known as Building Stronger Foundations, to address the findings of an independent external review of ASX's technology governance, operational risk and control frameworks. The program also incorporates ASX initiatives to improve enterprise risk management and governance practices identified prior to the review. The review was conducted at the instigation of the Bank and ASIC following a number of operational incidents in 2016 and 2017. It identified a number of areas for improvement across ASX's risk management, technology governance, enterprise architecture and incident management. As of 30 June, ASX had closed 28 of the review's 36 recommendations and addressed 95 per cent of the underlying deliverables in the Building Stronger Foundations program. The detail on ASX's progress in addressing specific areas for improvement is provided in the Bank's 2019 Assessment of ASX.

CHESS replacement

During 2018/19, ASX continued its work preparing to replace CHESS, its core system for clearing, settlement and other post-trade services for the Australian cash equity market. In September 2018, ASX released its response to a public consultation on the proposed functionality of the replacement system. The response also clarified what functionality ASX expects to make available from day 1 and set out a draft implementation timeline. This included an extension of the earliest commencement date for the new system by six months to the first half of 2021.

The Bank will continue to monitor the development of the new clearing and settlement system for cash securities transactions, in addition to monitoring the ongoing maintenance and smooth functioning of the existing CHESS system in the transition to the replacement system.

CCP risk management changes

In its 2018 Assessment of ASX, the Bank reviewed the ASX CCPs' practices against the CPMI-IOSCO report *Resilience of central counterparties: Further guidance on the PFMI* (CCP Resilience Guidance). The Bank concluded that the ASX CCPs' practices were either consistent or broadly consistent with that guidance, which has raised the bar in

24 The Bank's *September 2019 Assessment of the ASX CS Facilities* is available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/assessments/>.

relation to financial risk management at CCPs. However, the Bank identified a number of gaps, some of which were of potential concern, and set a recommendation for the ASX CCPs to implement plans to address these gaps.

During 2018/19, the ASX CCPs implemented a number of risk management enhancements as part of a multi-year work program to address the Bank's recommendation and other minor gaps identified by the Bank. The detail on the work ASX completed during the assessment period is provided in the Bank's 2019 Assessment of ASX.

Legal basis

In 2018/19, the Bank conducted a detailed assessment of the legal basis of the ASX CS facilities. The legal basis of a CS facility defines the rights and obligations of the facility, its participants, and other parties (such as clients or service providers), and underpins assumptions made in risk management systems. If the legal basis is inadequate or uncertain the CS facility may face unintended, uncertain or unmanageable credit, liquidity or operational risks, which may create or amplify systemic risk.

The Bank concluded that the ASX CS facilities observe the legal basis standard but identified some minor legal risks that had not been fully mitigated, as well as a lack of formality in ASX's business-as-usual control environment for legal risks. The Bank therefore made a number of recommendations for ASX to complete planned actions to mitigate its legal risks and take steps to strengthen business-as-usual processes for identifying and managing legal risks. The Bank also identified several potentially more serious gaps affecting the CS facilities' access to capital held to cover their operational, business and investment risks. ASX had addressed a number of these gaps by 30 June and had a plan in place to address the remaining gaps in the coming months.

The Bank's review also covered the related topics of the finality of settlement in the ASX CS facilities and the CCPs' arrangements for segregation and portability of client transactions and collateral. The detailed findings from the review are provided in the Bank's 2019 Assessment of ASX.

LCH Ltd

LCH Ltd is licensed in Australia to provide CCP services for over-the-counter (OTC) interest rate derivatives (IRD) and inflation rate derivatives.

In December 2018, the Bank published the *2017/18 Assessment of LCH Limited's SwapClear Service*.[25] This assessment concluded that LCH Ltd met the CCP Standards and either met or made progress towards meeting the Bank's regulatory priorities. The Bank also introduced a new regulatory priority. 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. The SwapClear service is typically closed for five hours 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. The Bank's regulatory priority requires LCH Ltd to complete its analysis of the technical and operational challenges associated with extending its operating hours, and provide this to the Bank along with a plan of how it expects to address this regulatory priority. LCH Ltd has been providing regular updates to the Bank on the progress of this work.

25 Available at <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/assessments/lch/2018/pdf/lch-assess-2018-12.pdf>.

Protected Payments System contingencies

The Bank set a new priority for LCH Ltd to improve its Protected Payments System (PPS) contingency arrangements. The PPS is used by LCH Ltd to settle cash payments, such as variation margin, to and from participants. LCH Ltd has previously identified that its contingency arrangements could be improved to ensure that payments can continue to be made in a timely manner in the event of a PPS bank outage or failure. LCH Ltd has identified a number of potential solutions involving both existing and new contingency arrangements, and has begun work to determine the viability of these solutions and where appropriate to implement them.

Areas of supervisory focus

In addition to the regulatory priorities set out in the 2017/18 Assessment, the Bank also identified four areas of supervisory focus for its supervision of LCH Ltd. These related to governance, operational resilience and cyber risk management, financial risk management and tiering. These areas had either experienced significant change that the Bank intended to monitor, or are areas where the Bank considered that further analysis was required. The Bank has been engaging with LCH Ltd and the Bank of England on these areas of focus and will provide a formal update in its 2018/19 Assessment of LCH Ltd.

CME

CME is a Chicago-based CCP that provides clearing services for a number of products from its US operations. CME does not currently have any direct Australian-based clearing participants, although Australian firms access CME's clearing services indirectly, as clients of direct participants. CME has held a CS facility licence in Australia since 2014, permitting it to offer clearing services to Australian-based institutions as direct clearing participants for OTC IRD and non-Australian dollar-denominated IRD traded on the CME market or the Chicago Board of Trade market (for which CME permits portfolio margining with OTC IRD). As noted in the 'Trends in Payments, Clearing and Settlement Systems' chapter, CME's licence was varied on 26 February to also permit the provision of clearing and settlement services for commodity, energy and environmental derivatives to be traded on the financial market operated by FEX. The service is expected to launch in the coming months.

In March 2019 the Bank published its assessment of CME for the 12 months ending December 2018. 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. The Bank's assessment concluded that CME had broadly addressed the outstanding regulatory priorities published in March 2018. The assessment set out three new regulatory priorities related to the variation of CME's licence. Consistent with the Bank's revised supervisory approach (see Box C), the Bank's next assessment of CME will be published in early 2021.

In 2018, CME provided its updated recovery and wind-down plans to the Bank for review. The Bank also undertook a review of the independent validation of CME's Liquidity Risk Management Framework (LRMF), and engaged with CME to monitor enhancements to this framework. Over the course of 2019, the Bank has continued to engage with CME on developments related to the implementation of its recovery and wind-down plans and the LRMF. In the coming period the Bank will also monitor progress against the new regulatory priorities, once the FEX service has launched.

Box D

Nasdaq Clearing AB participant default

Last year, an individual who participated directly in Nasdaq Clearing AB (a CCP which is a Swedish subsidiary of the Nasdaq Group) failed to meet a margin call to cover losses on a concentrated position on the spread between two electricity futures prices. Nasdaq Clearing AB placed the individual into default and covered the defaulter's position using all of the defaulter's collateral, plus about half of its default fund (€7 million of its own capital and €107 million of default fund contributions from other participants). Although CCPs are designed to mutualise large losses (as described above), it was not expected that the default of one private individual could cause losses on this scale. Following the default, Nasdaq Clearing AB announced plans to enhance its risk management in a number of ways.

The Bank has reviewed the risk management of the Australian-licensed CCPs in light of this incident. To the extent that the issues Nasdaq faced are relevant, the Australian-licensed CCPs have already identified these issues and have plans to address them.[1]

1 For more detail, see RBA (2019), Financial Stability Review, April, viewed 16 August 2019 and the Bank's September 2019 Assessment of the ASX CS Facilities <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/assessments/>.

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. The most recent assessment of RITS against the PFMI was endorsed by the Board and published in June 2019.[26] The assessment concluded that as at the end of March 2019, RITS observed all of the relevant principles other than the Operational Risk principle, which RITS broadly observed.

Key RITS developments during the assessment period are set out below.

30 August power outage

On 30 August 2018, the Bank experienced a major power outage affecting one of its data centres, resulting in large-scale disruption to its IT systems, including those supporting RITS. As a result, RITS services were unavailable from around 11 am before being gradually restored throughout the afternoon. All transactions submitted to RITS on the day were settled by the end of the day. As a result of the outage, RITS recorded average system availability below its target of being available 99.95 per cent of the time, and took longer to recover than the two-hour target set out in the PFMI. However, the impact on participants and the broader financial system was greatly diminished by the recovery of systems and completion of settlement on the day of the outage.

The Bank identified a number of follow-up actions arising from the incident, with all of the initial actions completed. The 2019 RITS assessment recommended that the Bank implement actions supporting the ability of RITS to recover within two hours of a disruption

26 Available at <https://www.rba.gov.au/payments-and-infrastructure/rits/self-assessments/2019/>.

as well as taking steps to validate this ability via contingency testing.

The Bank's progress in implementing these recommendations will be assessed as part of the 2020 assessment of RITS.

Cyber resilience

The Bank continued work to further strengthen its cyber resilience over the 2018/19 assessment period. This builds on work in the 2016/17 assessment period to review RITS's cyber-security controls, operational resilience, and options to improve the ability to detect and recover from a disruption of service in RITS, or loss of software or data integrity. The highest-priority recommendations from these reviews were addressed in early 2017, and most of the remaining lower-priority recommendations were implemented in 2018. A small number of lower-priority recommendations are being carried forward via related projects and initiatives. As part of this work, RITS was certified to the ISO 27001 standard for information security management.

The Bank has also continued work to address security standards established by SWIFT as part of its Customer Security Programme. In June, the Bank was assessed to be compliant with all 19 mandatory controls by an external auditor. The Bank is also continuing to evaluate current and emerging technology options that may further enhance the capability of RITS to recover from cyber attacks in a timely manner.

Endpoint security

The Bank is in the process of implementing the CPMI's May 2018 strategy on *Reducing the Risk of Wholesale Payments Fraud Related to Endpoint Security*.[27] Endpoint security refers to security arrangements between wholesale payment systems, messaging networks and their participants. The Bank will continue work on implementing the strategy over the next year as part of an ongoing process of continuous improvement in endpoint security.

CLS Bank International

CLS operates a payment-versus-payment settlement system (CLSSettlement) for foreign exchange transactions in 18 currencies, including the Australian dollar. CLS, an Edge Act Corporation, is chartered in the United States and is regulated and supervised by the Federal Reserve. The Federal Reserve has established a cooperative oversight arrangement for CLS, in which the Bank participates. Over 2018/19 CLS launched the CLSClearedFX and CLSNet services. The CLSClearedFX service facilitates payment-versus-payment settlement of centrally cleared OTC FX derivative obligations; this service is used for the LCH Ltd settlement service that was launched in July 2018 for eight currency pairs, including Australian dollar/US dollar. CLSNet was launched in November 2018. The service provides a bilateral payment netting solution for trades not settling in CLSSettlement, covering approximately 120 currencies.

SWIFT

SWIFT provides critical messaging and connectivity services to both RITS and CLS, as well as other FMIs and market participants in Australia and overseas. Oversight of SWIFT is conducted by the SWIFT Oversight Group (OG), which consists of the G10 central banks and the ECB. 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. Through the SWIFT Oversight Forum, these central banks receive information on the OG's

27 Available at <https://www.bis.org/cpmi/publ/d178.pdf>.

conclusions and have an opportunity to input into the OG's oversight priorities and policies. 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.

During 2018/19, cyber resilience remained an important focus of SWIFT and its overseers. By December 2018, all SWIFT members were required to self-attest their level of compliance with the mandatory security controls in SWIFT's Customer Security Programme. SWIFT regularly reviews its controls against emerging and evolving cyber threats, resulting in a further three security controls becoming mandatory for users at the end of 2019.

SWIFT also announced that it would commence a phased migration to ISO 20022 messages for cross-border payments between November 2021 and November 2025 (see the chapter on 'Retail Payments Regulation and Policy Issues').

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.

International

A focus of international policy work on FMIs over recent years has been on monitoring and implementing guidance in relation to CCP resilience, recovery and resolution. This work has been conducted under a joint CCP workplan developed by CPMI, the Financial Stability Board (FSB), IOSCO and the Basel Committee on Banking Supervision.[28] The Bank has been closely engaged in this international policy work, as well as other work areas, including monitoring of implementation of the PFMIs and the development of a strategy to reduce the risk of wholesale payments fraud. The CPMI published its final report on the incentives to clear OTC derivatives in late 2018.[29] The Bank has also contributed to a CPMI-IOSCO Policy Standing Group discussion paper on default management auctions and a report on the member authorities' experience with cooperation arrangements.

The Bank has continued to be involved in work considering the adequacy of financial resources for CCP resolution and the treatment of CCP equity in resolution. Following public consultation and engagement with industry in the first half of 2019, the FSB working group is in the process of developing additional guidance on these issues, for release in 2020.

In 2018/19 the Bank continued to contribute to the international monitoring of implementation of the PFMI by the CPMI–IOSCO Implementation Monitoring Standing Group. This included a contribution to peer review exercises that assess the extent to which a jurisdiction's implementation measures are complete and consistent with the PFMI, including reports on Switzerland and the United States that were published in the first half of 2019.

Domestic

In developing domestic policy for FMIs, the Bank works with the other regulators through the CFR, the coordinating body for Australia's main financial regulatory agencies. During 2018/19, the focus of the CFR's work on FMIs has been on FMI resolution and competition in clearing and settlement of equities.

28 Available at <http://www.bis.org/cpmi/publ/d165.pdf>.

29 Available at <https://www.bis.org/publ/othp29.htm>.

The Bank and other CFR agencies have continued to work on development of a resolution regime for FMIs. This has largely encompassed developing a detailed design for the legislative framework. It is intended that the resolution regime for FMIs will have similar features to APRA's crisis management regime including recent enhancements to it. However, some differences will be necessary, reflecting the different operations of FMIs and banks. To provide transparency around the proposed regime, and to avoid unintended consequences upon implementation, additional public consultation is planned for later this year. In addition to further detail on the proposed FMI resolution regime, the consultation is also likely to cover some proposed changes to the regulatory framework for FMIs.

The CFR, in cooperation with the Australian Competition and Consumer Commission (ACCC), has developed a policy framework to support competition in clearing and settlement of Australian cash equities. The framework includes minimum conditions for safe and effective competition in cash equity clearing and settlement in Australia. It also includes a set of regulatory expectations for ASX's conduct in the provision of such services where it is a monopoly provider. Significant elements of this framework, however, are currently not enforceable under the existing regulatory framework. Consequently, the CFR and ACCC are working with the Australian Government to implement legislative changes to the statutory framework for CS facilities to make these elements enforceable by the regulators.

Box E

2018 Financial Sector Assessment Program Review of Australia

In 2018 the International Monetary Fund (IMF) conducted its third Financial Sector Assessment Program (FSAP) review of Australia to assess the stability of the financial sector and the quality of domestic regulatory oversight arrangements. The review included an assessment of the regulation and supervisory oversight of FMIs in Australia, including consistency with the PFMI. In February 2019, the IMF published a technical note outlining its findings.[1] The note concluded that FMIs in Australia generally operate reliably. However, it made a number of recommendations to authorities, including the Bank, for the supervision, oversight and resolution of FMIs. The key recommendations are discussed below.

- *Finalise the proposed resolution regime for FMIs.* The IMF recommended that the Australian Government should prioritise the finalisation of a resolution regime for domestic FMIs, since the regulators currently lack the necessary framework and tools to ensure the continued provision of critical FMI services in a crisis that threatened an FMI's viability. Work by the Bank and other CFR agencies to progress the development of this

1 The IMF report is available at <https://www.imf.org/~/media/Files/Publications/CR/2019/1AUSEA2019005.ashx>.

resolution regime is described in the section on Policy Development.

- *Strengthen the independence of the RBA and ASIC for supervision of CS facilities, and enhance enforcement powers*. The IMF recommended that the Bank be granted independent enforcement powers for the CS facilities that it supervises. This would replace current arrangements under which the Bank would rely on ASIC to issue a direction in order to enforce compliance with regulatory requirements within the Bank's supervisory mandate. The IMF's recommendation also noted the powers conferred on the responsible Minister in legislation could constrain ASIC and the Bank in carrying out their supervisory responsibilities, although there was no evidence of such Ministerial intervention in practice. The consultation on the proposed FMI resolution regime is likely to include proposals to strengthen the supervisory powers of ASIC and the Bank.
- *Provide additional transparency on the requirements that apply to systemically important payment systems*. The IMF noted that the Bank had published its approach to oversight of RITS as a SIPS, but could consider publishing a more general statement explaining how it would determine if a payment system is systemically important and would bring such a system within its oversight against the PFMI. In June, the Bank published a policy describing its approach to the supervision and oversight of SIPS (see Box C).
- Complement cyber resilience assessments with industry-wide tests. Cyber resilience of FMIs is a key supervisory priority for the Bank and the IMF recognised that progress is being made in this area. However, the IMF recommended that Australian authorities could consider conducting industry-wide tests to complement their supervision activities and gain insights into the impact of a cyber incident on the industry as a whole, similar to exercises conducted in other countries. The authorities are considering the timing of when such an industry-wide cyber resilience exercise should be conducted.

The IMF's FSAP also included a review of elements of ASX Clear's governance and risk management framework against the PFMI. The findings of this review and ASX's initial response is described in Box B of the September 2019 assessment of the ASX CS facilities.

The Payments System Board's Announcements and Reserve Bank Reports

This section lists developments since mid 2018. The *Payments System Board's Annual Report 2006* contained a list of the Board's announcements and related Reserve Bank reports up to that time. Subsequent annual reports have contained an annual update.

2018

'Financial Technology and Payments Regulation', Michele Bullock, 5th Bund Summit on Fintech in Shanghai, 8 July 2018

Media Release 2018-19, 'Payment System Board Update: August 2018 Meeting', 24 August 2018

'The New Payments Platform and Fast Settlement Service', RBA *Bulletin*, September 2018

'An Update on Australia's New Payments Platform', Tony Richards, Chicago Payments Symposium, Federal Reserve Bank of Chicago, 3 October 2018

Media Release 2018-26, 'New Payments Platform: Consultation', 29 October 2018

Media Release 2018-28, 'Payment System Board Update: November 2018 Meeting', 23 November 2018

'A Journey Towards a Near Cashless Payments System', Phillip Lowe, Australian Payment Summit 2018, 26 November 2018

'Opening Panel Remarks on the Regulatory Landscape for Payments', Tony Richards, Australian Payment Summit 2018, 27 November 2018

'Payment Surcharges: Economics, Regulation and Enforcement', RBA *Bulletin*, December 2018

2019

Media Release 2019-03, 'Payment System Board Update: February 2019 Meeting', 25 February 2019

Media Release 2019-04, 'Consultation on the Operation of the Bank's Interchange Standards', 28 February 2019

'New Payments Insights from the Updated Retail Payments Statistics Collection', RBA *Bulletin*, March 2019

Media release 2019-09, 'Consultation on ISO 20022 Migration for the Australian Payments System', 8 April 2019

'Leaning In: Towards Better Payment and Clearing Systems', Michele Bullock, 2019 ASIC Annual Forum, 16 May 2019

Media Release 2019-13, 'Payment System Board Update: May 2019 Meeting', 24 May 2019

Media Release 2019-14, 'The Operation of the Interchange Standards: Conclusions and Variation of Standards', 31 May 2019

Media Release 2019-17, 'New Payments Platform: Conclusions Paper', 13 June 2019

'Modernising Australia's Payments System', Michele Bullock, Central Bank Payments Conference in Berlin, 25 June 2019

'Cryptocurrency: Ten Years On', RBA *Bulletin*, June 2019

Abbreviations

ABA	Australian Bankers' Association
ACCC	Australian Competition and Consumer Commission
ADI	Authorised deposit-taking institution
AML/CTF	Anti-money laundering/ counter terrorism financing
APC	Australian Payments Council
API	Application programming interface
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
AS-PSPs	Account-servicing payment service providers
ASX	Australian Securities Exchange
ASX Clear	ASX Clear Pty Limited
ASX Clear (Futures)	ASX Clear (Futures) Pty Limited
ASX Settlement	ASX Settlement Pty Limited
ATM	Automated teller machine
AUD	Australian Dollar
AusPayNet	Australian Payments Network
AUSTRAC	Australian Transaction Reports and Analysis Centre
Austraclear	Austraclear Limited
BETF	Black Economy Taskforce
BNPL	Buy now pay later
BOE	Bank of England
CAC Act	Commonwealth Authorities and Companies Act 1997
CBDC	Central bank digital currency
CCP	Central counterparty
CFR	Council of Financial Regulators
Chi-X	Chi-X Australia Pty Ltd
CMA	Competition and Markets Authority (UK)
CME	Chicago Mercantile Exchange Inc.
CNP	Card-not-present
CLS	CLS Bank International
CPMI	Committee on Payments and Market Infrastructure
CPS	Consumer Payments Survey
CP	Card-present
CS	Clearing and settlement
DCE	Digital currency exchange
DLT	Distributed ledger technology
DTA	Digital Transformation Agency
EMEAP	Executives' Meeting of East Asia-Pacific Central Banks
ePAL	eftpos Payments Australia Limited
ESA	Exchange settlement account
EU	European Union
FCA	Financial Conduct Authority (UK)
FEX	FEX Global Pty Ltd
Fintech	Financial technology

FMI	Financial market infrastructure
FPS	Faster Payments Service
FSS	Fast Settlement Service
GST	Goods and Services Tax
ICO	Initial coin offering
IFR	Interchange fee regulation
ISO	International Organization for Standardization
IOSCO	International Organisation of Securities Commissions
IoT	Internet of things
IRD	Interest rate derivatives
LCH Ltd	LCH Limited
LCR	Least-cost routing
LRMF	Liquidity Risk Management Framework
LVSS	Low Value Settlement Service
MAS	Monetary Authority of Singapore
MOU	Memorandum of Understanding
NFC	Near field communication chips
NPP	New Payments Platform
NPPA	NPP Australia Limited
NZ BKBM IRS	New Zealand bank bill benchmark interest rate swaps
NZD	New Zealand Dollar
OG	Oversight Group
OIS	Overnight index swaps
OTC	Over-the-counter
PEXA	Property Exchange Australia Limited
PFMI	Principles for Financial Market Infrastructure
PGPA Act	Public Governance, Performance and Accountability Act 2013
PPS	Protected Payments System
PSB	Payment System Board
PSD2	Revised Directive on Payment Services (EU)
PSP	Payment service providers
PSR	Payment System Regulator (UK)
QR	Quick Response
RBA	Reserve Bank of Australia
RITS	Reserve Bank Information and Transfer System
RPF	Regulator Performance Framework
RTGS	Real-time Gross Settlement
SCA	Strong customer authentication
SEC	Securities and Exchange Commission (US)
SEPA	Singer Euro Payments Area
SIPS	Systemically important payment system
SSF	Securities settlement facility
SST	Supervisory stress test
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TDIF	Trusted Digital Identity Framework
TPP	Third-party provider
WGPMI	Working Group on Payments and Market Infrastructures