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## Fintech and central bank digital currency in Australia

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**ADB Working Paper Series**

**FINTECH AND CENTRAL BANK  
DIGITAL CURRENCY IN AUSTRALIA**

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**Abstract**

This paper sheds light on Australia's fast real-time retail payments system, the New Payments Platform (NPP), which was launched in February 2018 by a consortium of 13 financial institutions, including the Reserve Bank of Australia (RBA). The NPP operates on a 24/7 basis and allows financial institutions to provide immediate funds availability to payment recipients, even where payers and payees have accounts with different financial institutions. This study highlights that there is no strong case for the RBA to issue a retail central bank digital currency given that the safer Next Generation Banknote series is available and the safer NPP, for which the deposits are projected by the Financial Sector Claims Scheme, is installed.

**Keywords:** central bank digital currency, fintech, Australia

**JEL Classification:** G21, G32, F65, F37

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## 1. INTRODUCTION

This paper focuses on two current issues relating to the payments system in Australia. The first is practical and in operation: the New Payments Platform (NPP), probably the most important piece of finance technology to emerge in retail payments in Australia in the last 20 years. The second is hypothetical and could remain that way for some time: the concept of central bank digital currency (CBDC).

## 2. FINTECH IN AUSTRALIA

The word “fintech” gets used often without necessarily having a clear definition. The Financial Stability Board (FSB) describes it as a “technology-enabled innovation in financial services”, which makes it a very broad concept. Rather than attempting to describe the entire landscape of fintech in Australia, I am going to focus on one key fintech development.

### 2.1 New Payments Platform

The NPP (Figure 1) is a collaboration between authorized deposit-taking institutions in Australia and the Reserve Bank of Australia (RBA) that flowed out of the Strategic Review of Innovation in the Payments System (the Strategic Review) conducted by the RBA in 2010–2012.<sup>1</sup>

The Strategic Review featured a multi-stage consultation process with stakeholders.

In June 2012, the RBA published the conclusions to the Strategic Review (see RBA [2012]). One of the key outcomes was that certain gaps in the payments system were identified, in particular:

- end-users’ inability to make retail payments with the recipient having visibility and use of those funds in near-to-real time;
- the lack of availability of many payments outside of normal banking hours;
- the inability to send any significant amount of data with a payment. Australia’s direct entry system allows only 18 characters of information to be transmitted with a payment. This is a particular challenge for business users, limiting their ability to integrate payment processes into their broader business; and
- the lack of an easy way of addressing electronic payments, with the need to correctly enter the Bank State Branch (the Australian equivalent of sort codes or bank codes) and account number details, rather than more intuitive or convenient means of addressing payments such as phone numbers, email addresses, or other identifiers.

The Payments System Board (PSB), which determines the RBA’s payments policy, identified that since there appeared to be barriers to cooperative innovation in the industry, it would set out some strategic objectives every few years, the initial set of which reflected the gaps identified in the Strategic Review:

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<sup>1</sup> See <https://www.rba.gov.au/payments-and-infrastructure/payments-system-regulation/past-regulatory-reviews/strategic-review-of-innovation-in-the-payments-system/> for more details on the Strategic Review.

- the ability to make real-time retail payments;
- the ability to make and receive low-value payments outside of normal banking hours;
- the ability to send more complete remittance information with payments; and
- the ability to address payments in a relatively simple way.

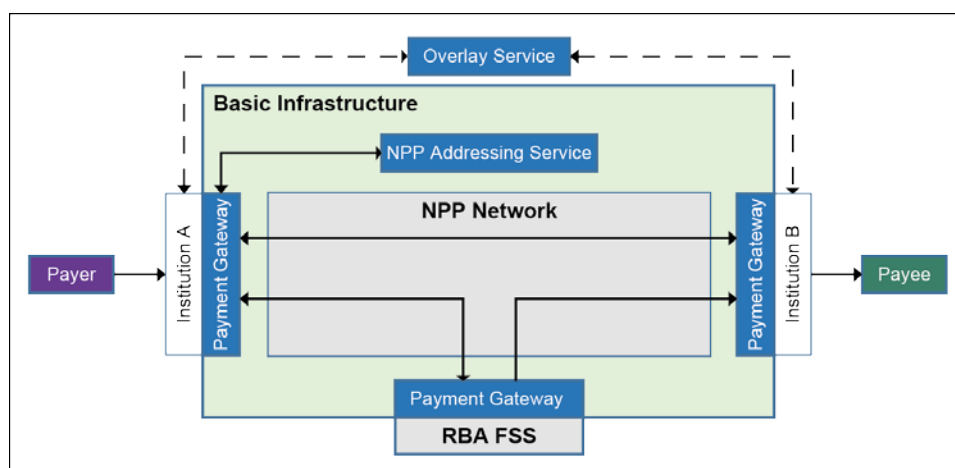
In setting the strategic objectives, the PSB was aiming for the industry to agree upon a solution, but in a way that gave the industry control over the approach. This was, in effect, a challenge to the industry to address these issues.

The industry responded by forming the Real-Time Payments Committee, which over the second half of 2012 managed to coalesce around a proposal that would address the Board’s strategic objectives, namely, the plan for the NPP (Real-time Payments Committee 2013).

The NPP, launched in February 2018, is a fast payments system developed by a consortium of 13 financial institutions, including the RBA. The NPP operates on a 24/7 basis and allows financial institutions to provide immediate funds availability to payment recipients, even when the payer and payee have accounts with different financial institutions. NPP payment messages use the ISO20022 format and can carry much richer remittance information than the 18 characters currently available for Direct Entry payments. In addition, the NPP provides a “PayID” service, which allows for a payment to be made to a registered phone number, Australian Business Number, or email address, instead of addressing a payment to a Bank State Branch and account number. To support the NPP, the RBA built the Fast Settlement Service, which provides fast, line-by-line settlement of NPP transactions on a 24/7 basis.

In addition, the NPP is designed to support “overlay” services. These are value-added services that make use of the payment and settlement functionality of the NPP. This could be anything from a set of rules establishing service levels, to advanced integration with other processes, e.g., the transfer of ownership of secondhand motor vehicles on the weekend.

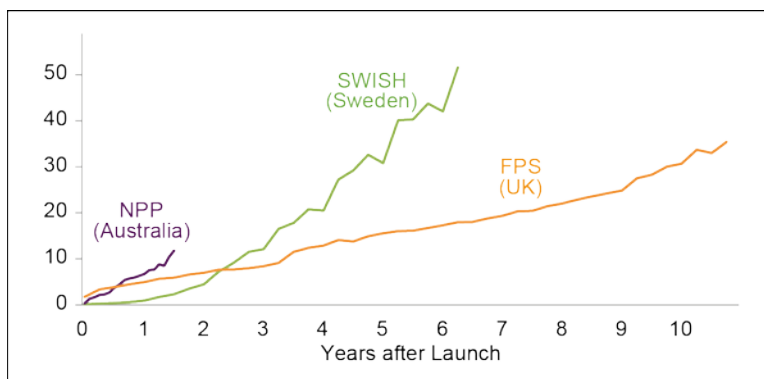
**Figure 1: NPP Infrastructure and Payment Processing**



FSS = Fast Settlements System, NPP = New Payments Platform, RBA = Reserve Bank of Australia.  
 Note: For a more detailed version of this diagram, including transaction flows, see Rush and Louw (2018).  
 Source: Reserve Bank of Australia.

The NPP has gradually built volume following its launch in February 2018. Its growth in the early stage of operations is comparable to that in Sweden’s Swish system, and similar to that of the UK’s Faster Payment System.

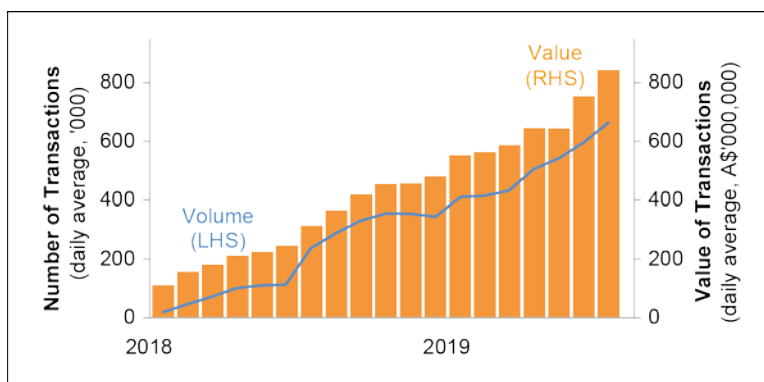
**Figure 2: Use of Fast Payments Systems**  
(annualized number of transactions per capita)



FPS = Faster Payments System, NPP = New Payments Platform.  
Sources: FSPL; Getswish; National statistics agencies; NPP Australia.

As of April 2019, there are about 500,000 NPP payments per day, with an average value of around A\$900 (Figure 3). The number of payments is expected to grow as Australia’s banks roll out additional functionality and services.

**Figure 3: New Payments Platform: Daily Average Number and Value of Transactions**



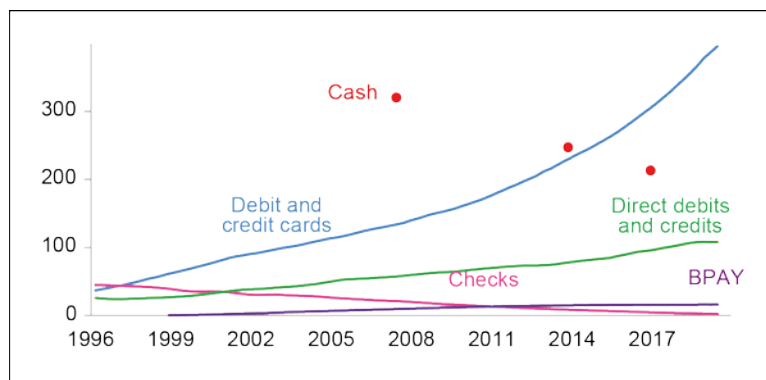
Source: Reserve Bank of Australia.

### 3. CENTRAL BANK DIGITAL CURRENCY IN AUSTRALIA

The key reason for addressing CBDC is the decline in the use of cash for transactions purposes and the rise of electronic payments (Figure 4).



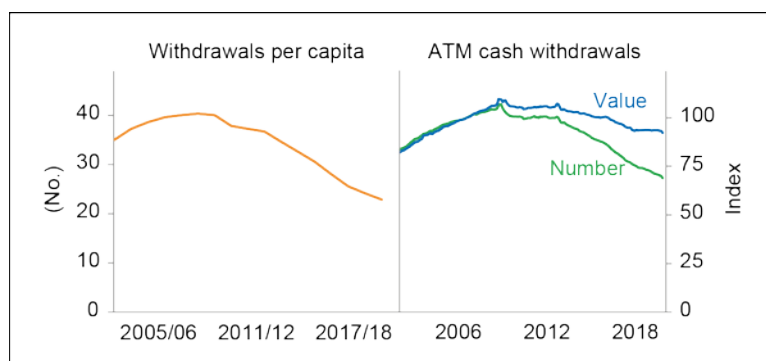
**Figure 4: Transactions per Capita**  
(number, rolling annual sum)



Sources: Australian Bureau of Statistics; AusPayNet; Colmar Brunton; Ipsos; Reserve Bank of Australia; Roy Morgan Research.

Australia is moving toward a near-cashless payments system (see Lowe [2018]). The decreasing importance of cash for transaction purposes can be seen readily in monthly data on ATM withdrawals (Figure 5). Australians used to visit the ATM on average about once every 9 days. Now it is slightly more than 2 weeks between visits and seems likely to continue to fall.

**Figure 5: ATM Cash Withdrawals**



ATM = automated teller machine.

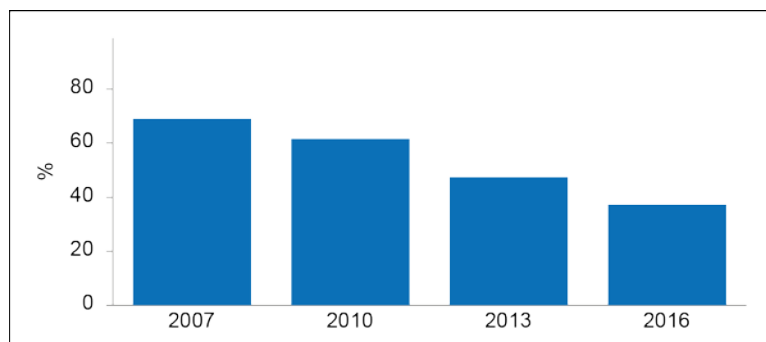
Note: For the index, January 2007 = 100. Statistics are seasonally adjusted.

Sources: Australian Bureau of Statistics; Reserve Bank of Australia.

The decline in the use of cash can also be seen from the RBA’s periodic consumer payments surveys. Every 3 years, the RBA surveys over 1,000 Australians about their payment patterns and preferences. We ask them to record all their payments over the course of a week. The first survey was in 2007 and was a paper diary that people carried around. Now, of course, the diary is principally online, although we try to capture the preferences of the small percentage of the Australian population without an online presence.

When we first did such a survey, cash accounted for around 70% of the number of household payments. In our most recent study in 2016, this had fallen to 37% (Figure<sup>6</sup>). Our fifth study is due to be conducted toward the end of 2019. It is likely to show a further fall in the number of cash payments, consistent with the decline in ATM transactions and the growth of electronic payments.

**Figure 6: Consumer Payments Surveys: Number of Cash Transactions**  
(% of consumer payments)

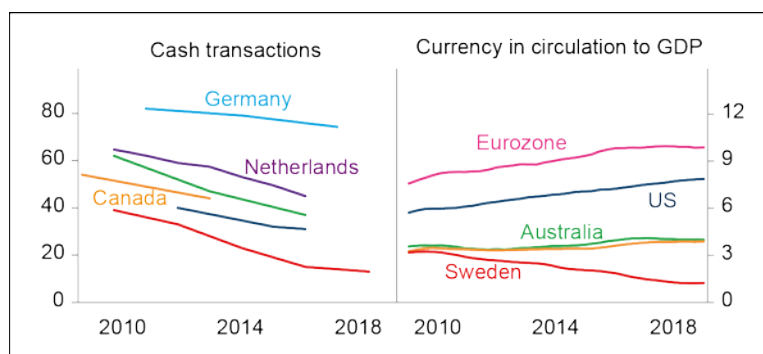


Source: Reserve Bank of Australia calculations, based on data from Colmar Brunton, Ipsos and Roy Morgan Research.

Despite what is effectively a halving of its share of transactions over a decade, cash is still widely used and available for transactions. In some situations, paying with banknotes is quicker and more convenient than paying electronically, although this advantage is less than it once was. Some people also simply prefer paying in cash, perhaps because they find it easier to budget. Our 2016 consumer payments survey indicated that around 14% of Australians preferred using cash as a budgeting tool, and 12% of our sample reported paying in cash for all of their in-person transactions during the survey.

In addition, despite the decline in the use of cash for transactions, the value of banknotes on issue in Australia is close to the highest it has been in 50 years. There is still a demand to hold cash as a store of value, both from Australian residents as well as offshore (see Flannigan and Staib [2017]). The low-interest rate environment means that the opportunity cost of doing so is less than it has been in the past. Our consumer payments surveys also indicate that some holding of cash is done for contingency and emergency purposes; when we asked people in 2016 why they held cash outside of their wallet, the most common response, from nearly half of respondents, was that it was for emergency transaction needs. And, indeed, with natural disasters like floods and bushfires, where electronic and telecommunications networks are affected, there is often a reliance by affected communities on cash being available. This also applies where there are operational outages in the retail payments system, and there have been several serious recent incidents in Australia that have affected networks and participants.

These broad trends are consistent with trends internationally. There are several other countries that undertake payments surveys that resemble our triennial study. The methodologies are often somewhat different, so direct comparisons should be done cautiously, but there is a fair amount of consistency across different jurisdictions (Figure 7). In most countries, the fall in the share of cash payments has occurred while its value in circulation has risen. There are a few exceptions, the most notable being Sweden. Interestingly for Australia, our most recent observation is close to where cash use was measured in Sweden ahead of its decline commencing.

**Figure 7: Trends in Cash Use and Currency to GDP**

GDP = gross domestic product, US = United States.

Sources: Bank of Canada; Colmar Brunton; De Nederlandsche Bank; Deutsche Bundesbank; Federal Reserve Bank of San Francisco; Ipsos; Reserve Bank of Australia; Roy Morgan Research; Sveriges Riksbank.

It is in this context that quite a bit of consideration has been given to CBDC as an electronic equivalent of banknotes. Many central banks, as well as the Bank for International Settlements and the International Monetary Fund, have done some work in this area. Rather than define CBDC and all its potential features, a very high-level approach characterizes it as a liability of the central bank, as well as near-universal in its accessibility, and with the ability to be transferred electronically with immediacy to the recipient.

If, from a policy perspective, an economy wanted an electronic equivalent of cash, the likely issuer would be the central bank. Some of the earlier forms of paper money were issued by private banks. For example, during the Free Banking Era (1837–1866) in the US, banks could freely issue paper money. However, these private currencies proved to be highly volatile and subject to panics. Many of the banks issuing these currencies primarily lent to farmers and downturns in the agricultural sector were often sufficient to generate a run on them. To overcome these recurrent crises, central banks were granted the exclusive right to issue banknotes, something that is now mostly taken for granted as one of the responsibilities of a central bank.

A less advantageous pathway would be via something that looked like Bitcoin. Setting aside the huge energy costs involved in proof-of-work consensus mechanisms, what is needed for money is being a means of payment (and it turns out that doing this at scale is hard); a unit of account (almost never, outside of other crypto-asset markets); and a store of value (highly volatile).

The provision of currency by a central bank, if well-managed, has aspects of a public good. It is non-excludable since all users of the currency can rely on the central bank's backing of the settlement asset, and it is benign since the reliance on the central bank's reputation by any individual does not diminish the ability of others to do likewise.

The Riksbank's Skingsley has noted that while it may not be desirable for the general public's access to central bank money to be determined by the market and to steadily decline over time, there is currently a need among the general public and companies to have access to central bank money and that this is likely to persist. If it does, central banks should be able to meet it in some electronic form (see Skingsley [2016]).

With the right technology, CBDC could be a backup when other retail payment networks are down, in a similar manner that physical cash provides some resilience for operational failures and other contingency scenarios in the retail payments system.

Another reason that would support issue of CBDC, as has been seen in the Riksbank's views, is if there were segments of the population whose needs were not met by private sector services.

However, our current thinking is that it is not evident that there is a strong case for the RBA to issue an electronic version of the Australian dollar:<sup>2</sup>

If people want to hold or use something that is a liability of the central bank, banknotes remain available. The RBA provides cash consistent with demand by users and supports its distribution. Additionally, we have over recent years invested in a Next Generation Banknote series, with stronger anti-counterfeiting measures, as a commitment to ensuring that cash has public confidence and meets community needs.

The NPP means that account-to-account payments are now feasible 24/7, and with immediacy of funds to the recipient, in contrast to other electronic payment methods where there is either a lag in funds being made available or a credit decision by the payee's bank to advance funds ahead of settlement.

This system is still in a roll-out phase, but as more financial institutions join the NPP and as the existing ones expand their reach and functionality, it should get very close to ubiquity (Australia is a highly banked population). As noted above, if this universality were not met, we would need to consider the potential policy issues arising.

Although commercial bank deposits are not a central bank liability, depositors in Australia are protected by the Financial Sector Claims Scheme (FSCS), up to a value of A\$250,000 per holding at a financial institution. In effect, the account-to-account transfers enabled by the NPP provide for something that is almost universally accessible, electronic, and up to a certain value something that is arguably a contingent liability of the central bank. It is also immediately available to the recipient.

Given this, something that is functionally equivalent to CBDC (or at least a very close substitute) is already available.

It might be possible to design a CBDC that also provides some of the anonymity features of banknotes, i.e., compared with account-to-account transfers, an alternate model might have less of an electronic fingerprint and be capable of transfer without identity or traceability. As the RBA's Governor has noted, it is hard to see a strong public policy case here for issuing an electronic form of the currency that replicates the capacity of cash for anonymity.

### **3.1 Financial Stability**

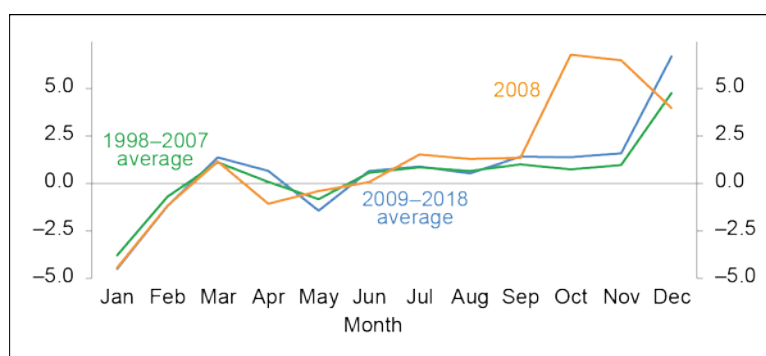
If the RBA were to issue electronic banknotes, it is possible that in times of banking system stress, people might seek to exchange their deposits in commercial banks for these instruments. This might be because they apply some discount to or are uncertain about the FSCS protections described above, or because they hold commercial bank assets higher than the value of the guarantee (this could also reflect expectations that FSCS claims may take some time to be paid). Given their electronic nature, switching from commercial bank deposits to digital banknotes would involve less friction than moving from commercial bank accounts to physical cash. As the RBA's Governor has noted, "it might be easier to run on the banking system. This could have adverse implications for financial stability" (Lowe 2017).

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<sup>2</sup> See Lowe (2017) for more discussion of this topic.

In fact, we have a bit of evidence on the willingness of the public to switch from commercial bank to central bank instruments from the 2008 Global Financial Crisis. As many recall, the turbulence that had been building in the financial sector over 2008 reached its peak with the bankruptcy of Lehman Brothers in September. As the crisis hit, one reaction from Australian households was to withdraw cash. Figure 8 shows the regular seasonal pattern of cash demand: there is a mini-spike around Easter, but the main time of year for cash demand is just prior to Christmas (which gets unwound in January). In 2008, we saw this Christmas-style spike in September through November, basically up until the announcement of the Government guarantee of deposits. While the values are not large compared to the size of the banking system, we think this is an instructive example of a flight to safety during a scenario of financial uncertainty.<sup>3</sup>

**Figure 8: Value of Banknotes in Circulation**  
(higher denominations, monthly % growth)



Source: Reserve Bank of Australia.

## 4. CONCLUDING COMMENTS

Fintech typically brings connotations of small, nimble, fast-growing start-up firms exploring the opportunities that technology presents for the financial sector. But in Australia one of the significant pieces of fintech in recent years has involved both big and small institutions as well as the RBA building some key new infrastructure, i.e., the NPP.

In the absence of the NPP, there would likely be some major gaps in the functionality offered to end-users in the Australian payments system. Alongside the decline of cash, if these gaps persisted then there would be a much stronger case to consider CBDC in the near term in Australia.

With the NPP, however, we think that we have a bit more time to wait and see. The ubiquitous, electronic, account-to-account transfer with real-time receipt of funds by the payee, backed with a capped government guarantee that the NPP offers, is not exactly CBDC, but it is a very close substitute. It appears that it might be close enough that the gap that CBDC would fill is currently quite small.

<sup>3</sup> For much more detail on this topic, see Cusbert and Rohling (2013).

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