

Bulletin

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RESERVE BANK OF AUSTRALIA

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The Term Funding Facility

Max Alston, Susan Black, Ben Jackman and Carl Schwartz^[*]



Photo: Reserve Bank of Australia

Abstract

The Reserve Bank's Term Funding Facility (TFF) was announced in March as part of a monetary policy package to reduce funding costs across the economy and to support lending, especially to small and medium-sized businesses. Most of the initial allocations of the TFF were drawn upon by the time the first phase of the facility closed in September. In September, the Reserve Bank Board adjusted the TFF in response to economic conditions, expanding and extending the facility and in November it lowered the interest rate on new drawings. Drawdowns from the TFF have increased the Reserve Bank's balance sheet significantly and the facility has contributed to an easing in financial conditions. As a result of the Reserve Bank's policy measures, including the TFF, bank funding costs and lending rates are at historically low levels.

The TFF provides low-cost funding to support the Australian economy

On 19 March 2020, the Reserve Bank Board announced the Term Funding Facility (TFF) as part of a comprehensive policy package to support the Australian economy in response to the COVID-19 pandemic (RBA 2020a). The TFF provides low cost three-year funding for authorised deposit-taking institutions (ADIs) to support the supply of credit. It also provides an incentive for ADIs to increase their lending to businesses, especially small and medium-sized enterprises (SMEs).

All ADIs that extend credit are eligible to participate in the TFF. This includes more than 130 Australian banks, credit unions and building societies, as well as foreign bank branches and subsidiaries operating in Australia. Funding is available for all ADIs at a fixed interest rate, in line with the cash rate and the 3-year Australian Government bond yield targets, and secured with collateral to mitigate financial risk to the Reserve Bank.

ADIs had access to two different funding allowances from early April: the initial allowance and the additional allowance. The initial allowance,

set at 3 per cent of each ADI's total credit outstanding, was available to all ADIs until 30 September 2020. The additional allowance is available to ADIs that increase lending to businesses since around the start of the scheme. For every dollar of extra loans to large businesses, ADIs can access one additional dollar of funding, and for every dollar of extra loans to SMEs, ADIs can access five additional dollars of funding.^[1]

Since the introduction of the TFF, the Reserve Bank Board has made adjustments in response to evolving economic conditions. At its September meeting, the Reserve Bank Board expanded and extended the TFF. ADIs were given access to additional low-cost funding through a supplementary allowance equal to 2 per cent of outstanding credit, available from 1 October 2020 until the end of June 2021. This decision ensured that ADIs without an additional allowance maintained access to the TFF after the initial allowance closed at the end September 2020. The drawdown period for the additional allowance was also extended from the end of March 2021 to the end of June 2021 (RBA 2020d). At its November meeting, the Reserve Bank Board reduced the interest rate on new TFF funding from 0.25 per cent to 0.1 per cent, in line with the reduction in other policy rates (RBA 2020e).

This article provides an overview of the objectives and design of the TFF and, with the drawdown window for the initial allowance closed, explores the take-up and effects of the scheme to date.

The TFF has reduced interest rates and supported the availability of credit

Following the global financial crisis, central banks in a number of economies, including in the euro area, Japan and the United Kingdom, introduced longer-term lending operations. These schemes aimed to provide further stimulus when interest rates were near the effective lower bound and the supply of credit had contracted (RBA 2020b). These operations have generally been judged as effective (Potter and Smets 2019). Given the challenges arising from COVID-19, these central banks have renewed or retained existing schemes, and a number of others have launched new schemes, including central banks in India, Mexico, New Zealand, Singapore, Sweden and the United States.

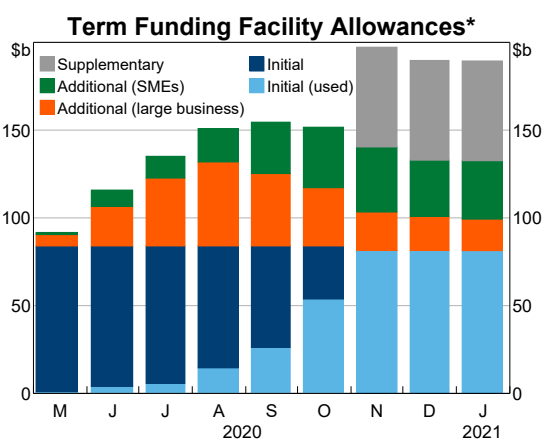
The TFF in Australia has two main objectives: (i) to reinforce the benefits to the economy of very low policy rates by reducing funding costs of ADIs and, in turn, interest rates for borrowers; and (ii) to encourage ADIs to support businesses, particularly SMEs.

Two channels of transmission help to lower lending rates by lowering ADIs' marginal cost of new lending. Firstly, the TFF has a direct effect on funding costs, since it is cheaper than alternative forms of wholesale term funding. Secondly, the TFF has an indirect effect on funding costs, including by reducing ADI bond issuance, which places downward pressure on yields (Harimohan, McLeay and Young 2016).^[2] This second channel benefits all ADIs, regardless of whether they draw from the TFF, and helps to lower costs more broadly for borrowers in wholesale markets.

The TFF aims to encourage lending to SMEs because they face particularly difficult economic conditions (Lowe 2020b). The additional allowance has markedly increased funding allowances for a number of ADIs that have relatively small initial and supplementary allowances (as they have relatively small loan books) but that have been able to increase business lending over the assessment window.

ADIs can count undrawn TFF allowances as liquid assets to meet their regulatory liquidity requirements, to the extent that they have eligible

Graph 1



collateral that would not otherwise be counted (such as the debt of other ADIs). As a result, the TFF also immediately eased liquidity needs for some banks.

The TFF was designed to be sizeable, accessible, simple, attractive, and timely

To support the TFF's objectives, the facility was designed to be:

- sizeable – large enough to have some influence on funding conditions;
- accessible – available to all ADIs;
- simple – easy to operationalise and to understand;
- attractive – used by ADIs; and
- timely – available to ADIs quickly during a challenging period.

These design principles informed the setup, structure, and parameters of the TFF. In addition, the Reserve Bank Board noted that it retained the flexibility to modify any aspect of the scheme, which it has used on two occasions this year.

To ensure that the scheme was sizeable, at the outset the initial allowance was set at 3 per cent of an ADI's outstanding credit. With total credit just under \$3 trillion, this meant that the available initial allowance was \$84 billion, which amounted to over 4 per cent of GDP. The incentives included in the additional allowances added to the potential size of the scheme, although by design this ultimately depended on lending outcomes. The supplementary allowance provided greater confidence about continued access to low-cost funding given the potential for declines in business lending, which would lead to a reduction in existing additional allowances.

Granting access to all ADIs ensured low-cost funding for the prudentially regulated sector, which provides the bulk of financing to the Australian economy. The Australian Government created a complementary program of support for the non-bank financial sector, small lenders, and the securitisation market – the Structured Finance Support Fund – implemented by the Australian Office of Financial Management.^[3]

The TFF was designed to be accessible and easy to operationalise for all ADIs by building on existing procedures for the RBA's open market operations. Accordingly, funds available under the TFF are lent in the form of repurchase agreements (repos), whereby the RBA provides funds to ADIs' exchange settlement (ES) accounts and receives highly rated securities from ADIs as collateral. Upon maturity or termination of the funding, the RBA receives ES funds from the ADI, with interest, and returns the collateral to the ADI. This operational choice also meant that the TFF could be operationalised through the Reserve Bank Information and Transfer System (RITS) regulations, rather than through separate contracts with each bank.

As with the RBA's other market operations, the collateral is the primary protection against counterparty risk for the Reserve Bank. Eligible collateral for this purpose was extended beyond the government and ADI securities typically used for open market operations to include the AAA rated tranches of self-securitisations – structured pools of assets such as residential mortgages created by ADIs (explained further below) – to facilitate large scale use (Cole and de Roure 2020).

In order to minimise the resource demands of ADIs associated with accessing the TFF, the data used to calculate ADIs' TFF allowances are taken, where available, from existing data collections. In most cases, ADIs have not needed to report new data to the RBA to access their allowance under the scheme, and additional reporting is only required for smaller entities that intend to access any additional allowance. This also means that the data provided by ADIs to calculate allowances are subject to existing quality controls and audit requirements.

The pricing for the TFF (initially 25 basis points and more recently reduced to 10 basis points) was designed to be attractive and cheaper than other sources of market funding to help lower ADIs' funding costs. In addition, to encourage participation, the incentives underlying the TFF additional allowance 'reward' desirable behaviour (such as increasing lending), rather than penalise less desirable outcomes (such as decreasing lending). This decision built on experience from

schemes overseas, which, over time, have tended to make greater use of rewards rather than penalties (RBA 2020b).

Some overseas term funding schemes have used price incentives, rather than quantity incentives (typically where banks receive cheaper funding if they reach certain lending targets). The RBA's TFF does not involve price incentives; rather the price was chosen to align with the cash rate and 3-year yield targets and to fit with the principle of minimising uncertainty and operational complexity.

Keeping the design relatively simple and based on existing practices helped the Bank establish a scheme that ADIs could use in a short time frame. The scheme was open on 6 April, three weeks after being announced.

Banks accessed almost all of the initial allowance

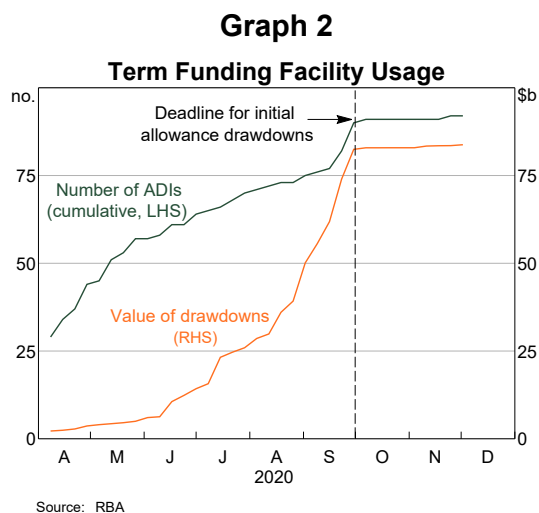
Take-up of initial allowances was modest in the first few months of the scheme, notwithstanding a flurry of activity from some smaller banks in the first week (Graph 2). Policy actions, including the announcement of the TFF and the increased size and term of Bank market operations, had helped to significantly alleviate uncertainty about banks' funding positions that had arisen at the onset of the pandemic. ADIs' term funding needs in aggregate were low, reflecting their strong funding positions prior to the pandemic, strong growth in deposit funding and ADIs' expectations of modest growth in credit.

Drawdowns picked up mid-year as some ADIs began to spread their drawdowns over the available funding window, partly to spread out the associated maturities in 2023. Take-up accelerated ahead of the deadline to draw down initial allowances at the end of September, with ADIs keen to lock in 3 year funding from the latter part of the drawdown period. Part of the drawing was to replace wholesale funding that would mature in future months. In aggregate, \$81 billion or 97 per cent of the \$84 billion TFF initial allowance was used (Graph 1). By number, around two-thirds of eligible ADIs accessed the TFF. Of the 89 ADIs that have accessed the TFF, most drew the vast bulk of their initial allowance.

The bulk of the value of drawdowns to date have used the AAA tranches of self-securitised residential mortgage-backed securities (RMBS) as collateral. ADIs can establish self-securitised RMBS using their existing mortgage assets. As a result, many ADIs do not need to purchase additional securities to use as collateral, and so do not need to take any additional credit or market risk. Self-securitised RMBS also have higher yields compared to other assets that can be used as collateral for the TFF, making RMBS more cost-effective than other forms of collateral.

However, not all ADIs have self-securitised loans. This may be because they do not lend in sufficient size to make it economic for them to incur the operational, legal and ratings costs required to set up a self-securitisation, or it may be difficult for them to achieve an AAA-rated tranche given the underlying loans. ADIs without self-securitisations have predominantly pledged corporate or bank bonds, with some pledging Australian and semi government bonds.

ADIs that did not draw down on their initial allowance mostly comprised of foreign banks and some smaller ADIs (Graph 3). Most of these ADIs do not have self-securitised assets, which made it more costly to access the scheme. These ADIs accounted for a very small share of total initial allowances, though they account for a larger share of additional allowances.



Additional allowances rose and fell alongside demand for credit by businesses

Each ADI also has access to an additional allowance if it has expanded lending to businesses since early 2020, providing an incentive for ADIs to extend credit.^[4] The additional allowance available is updated each month following the receipt of the most recent data on large business and SME credit outstanding. Additional allowances rose strongly in the first few months following the commencement of the TFF (Graph 1). This reflected a sharp pick-up in large business lending, as businesses drew on revolving credit facilities for precautionary reasons in response to the COVID shock (Graph 4). More recently, however, additional allowances have declined from their August peak as large businesses have largely repaid these earlier drawings on credit lines.

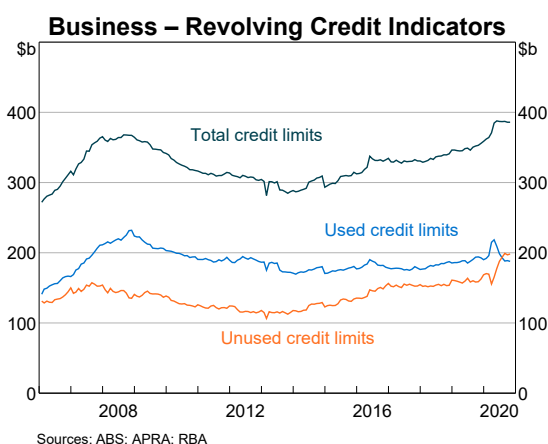
Aggregate lending to SMEs has remained around the same level over the past year or so (Graph 5). However, this aggregate hides the fact that SME lending by some ADIs has increased while SME lending by other ADIs has decreased over that period. By October, the bulk of additional allowances had been attributable to increases in SME lending since March.^[5] However, demand for business credit overall has been soft, reflecting a reluctance by businesses to invest and take on additional debt in the current economic climate. Temporary initiatives, such as JobKeeper, have also

alleviated businesses' need for funding by boosting cash flow for businesses (RBA 2020c).

The availability of credit to businesses has also tightened somewhat in response to the pandemic. Banks have indicated in liaison that much of this reflects the application of existing standards in a weak economic environment. Banks are also cautious about lending to sectors heavily exposed to the COVID shock (such as hospitality and accommodation) and to businesses that are new to that bank.

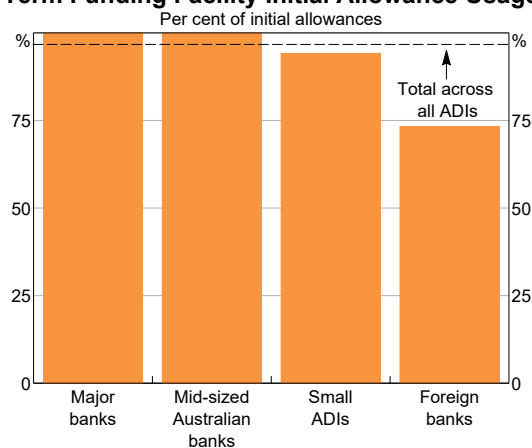
The major banks account for the bulk of TFF allowances in aggregate (Graph 6). However, foreign banks have the largest additional allowance in aggregate, due to their focus on business lending and somewhat stronger business credit growth since the start of the year.

Graph 4

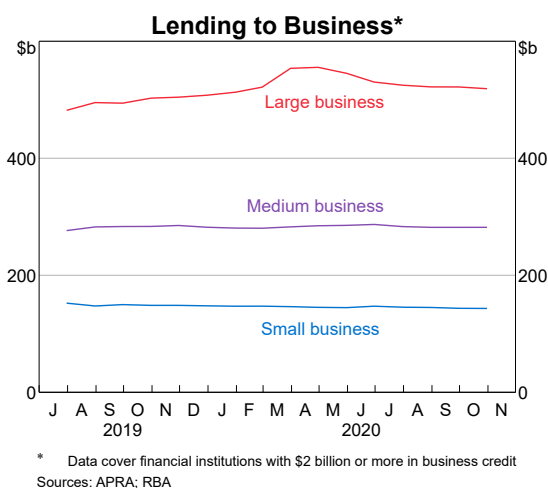


Graph 3

Term Funding Facility Initial Allowance Usage



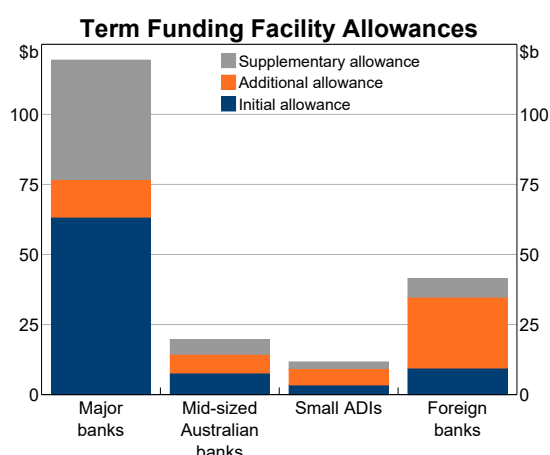
Graph 5



Use of the supplementary and additional allowances has been low to date

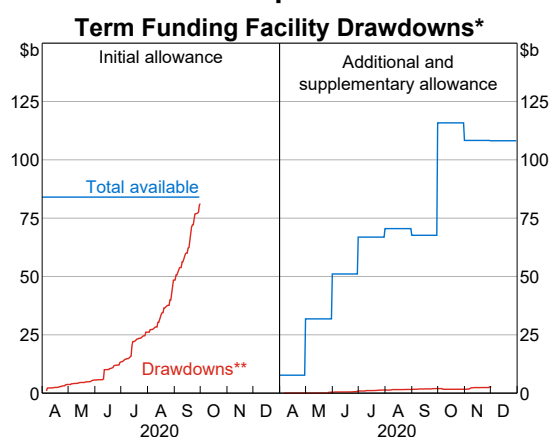
To date, usage of supplementary and additional allowances has been minimal, as banks remain well funded, use of the initial allowance has been larger than bond maturities over the same period, credit growth remains modest, and the deadline for drawing on these allowances is some time away (Graph 7). Similar to the initial allowance period, further TFF drawings are likely to be gradual for some time but increase towards the June 2021 deadline.

Graph 6



Sources: APRA; RBA

Graph 7



* Until 30 September, repos were applied against initial allowance until fully drawn, then against additional allowance. From 1 October, repos applied against additional and supplementary allowances

** Includes all settled, contracted and pre-processed repos to date

Sources: APRA; RBA

The TFF is helping to keep funding costs and lending rates at historic lows

The interest rate paid on TFF drawdowns is lower than the marginal cost of market-based funding for the same term, directly lowering funding costs (Graph 8).^[6] The availability of the TFF has also indirectly added to downward pressure on funding costs since March. This is because the availability of low-cost funds from the TFF has reduced the need to raise funds in other markets; in line with this, bond issuance by Australian banks has been subdued and bonds outstanding have declined noticeably since March (Graph 9). This lower supply of bank bonds has contributed to a decline in bank bond yields and yields more generally, as investors substitute towards other assets, such as corporate bonds. Like bank bonds, non-financial corporate bond spreads have narrowed since the policy package was introduced in March, in part because investors that would have previously purchased bank bonds have sought other assets. The TFF can also contribute to a reduction in a broader range of interest rates in the economy if banks use TFF funding to buy bonds (Kent 2020).

Although the TFF has reduced the incentive for some banks to issue bonds, the Australian bank bond market remains sizeable. The stock of bank bonds outstanding (excluding hybrids) is around \$500 billion, with bonds issued in the domestic market accounting for roughly two-fifths of this. The TFF has temporarily displaced some of the market for Australian bank bonds issued both domestically and offshore and is likely to continue to do so, though the major banks have reported in liaison that they intend to ensure that the low issuance does not affect investor engagement. Meanwhile, there has been strong bond issuance by foreign-owned banks in Australia over the year to date. There has also been active issuance of RMBS by non ADIs.

The reductions in funding costs from the TFF and from the other measures in the RBA's policy package have been passed through to business and household borrowers (Graph 10). A large portion of these reductions occurred immediately following the announcement of the TFF and other policy measures, before banks could draw on their

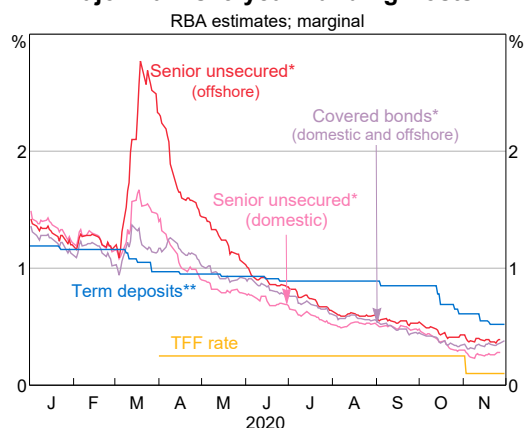
allowances. Since the end of February, interest rates on variable-rate loans to large businesses have fallen by 80 basis points, while interest rates on variable-rate loans to small- and medium-sized businesses have declined by 70-75 basis points. Similarly, the average interest rate paid on outstanding variable-rate mortgages has declined by around 40 basis points and rates for new fixed-rate housing loans have declined by around 70 basis points since the end of February. The interest rates on new fixed-rate loans are now around 55-65 basis points below new variable interest rates and the proportion of loans funded at fixed interest rates has increased sharply since March (Graph 11). In response to the policy package announced on 3 November, including the reduction in the rate for new TFF drawings and the

decline in the 3-year yield target to 10 basis points, banks further reduced lending rates on a range of housing and business loans, especially fixed-rate and small business loans.

As noted above, the TFF has been in place against an environment of soft demand for credit, and was introduced as part of a package of Reserve Bank policy measures designed to support the economy. As a result, it is hard to know how much the additional allowance incentives have been effective in supporting business credit growth. Some ADIs have noted in liaison that they have introduced initiatives to increase business lending to capitalise on the benefit from the additional allowance. While total lending to SMEs has been little changed since the start of the scheme, a range of ADIs have

Graph 8

Major Banks' 3-year Funding Costs



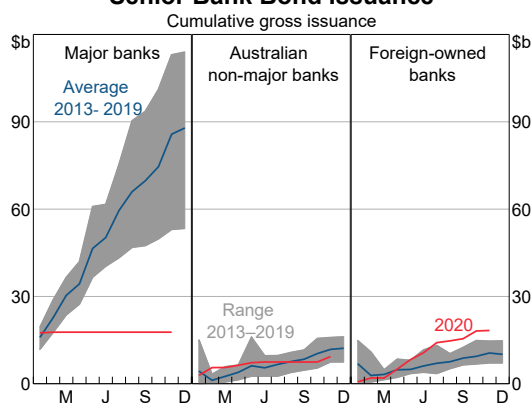
* Recent estimates are uncertain due to low trading volumes and a lack of issuance

** Simple average of advertised rates on \$10,000 deposits

Sources: Bloomberg; CANSTAR; RBA

Graph 9

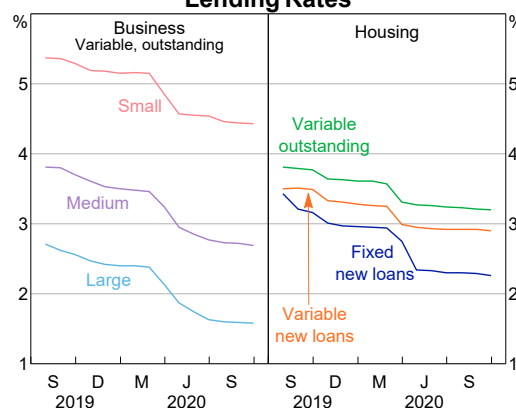
Senior Bank Bond Issuance



Sources: Bloomberg; Private Placement Monitor; RBA

Graph 10

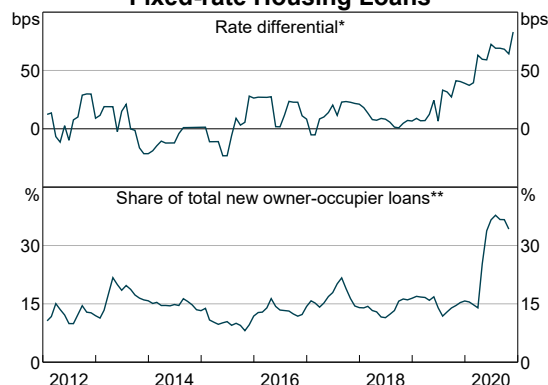
Lending Rates



Sources: APRA; RBA

Graph 11

Fixed-rate Housing Loans



* Rate differential between variable and fixed rate loans for owner-occupiers; major banks' package rates less advertised 3-year fixed rate to April 2009; thereafter, major banks' best advertised variable rate less advertised 3-year fixed rate

** Seasonally adjusted loan approvals data until September 2019; thereafter, loans funded in the month (non-seasonally adjusted)

Sources: APRA; CANSTAR; major banks' websites; RBA

increased their lending to SMEs, benefitting from the option of drawing on their additional allowance.



Footnotes

- [*] The authors are from Domestic Markets Department.
- [1] Detail on how this allowance is calculated are available in the TFF Operational Notes, which include some Worked Examples.
- [2] Harimohan, McLeay and Young (2016) conclude that the indirect impact on funding costs from the Bank of England's Funding for Lending Scheme was larger than the direct effect.
- [3] See <<https://www.aofm.gov.au/sfsf>>
- [4] As outlined above, for every dollar of extra loans to large businesses, ADIs can access one additional dollar of funding, and for every dollar of extra loans to SMEs, ADIs can access five additional dollars of funding. Detail on how this allowance is calculated is available in the TFF Operational Notes, which includes some Worked Examples.
- [5] The additional allowances for SME lending can increase while the stock of aggregate SME lending remains unchanged; an ADI that expands SME lending will receive a positive additional allowance for this lending, while an ADI that contracts SME lending will receive zero allowance.
- [6] Including for covered bonds, which are more directly comparable to secured TFF funding.

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A Counterfeit Story: Operation Gridline

Kathryn Miegel and Kylie Symeonakis^[*]



Photo: Lighthousebay – Getty Images

Abstract

In 2019, the counterfeiters responsible for the production of a group of high quality \$50 and \$100 counterfeit banknotes were sentenced. From first detection at the Reserve Bank's Counterfeit Examination Laboratory, through police investigation, arrest and finally prosecution and sentencing, this counterfeit episode was resolved reasonably quickly. This experience highlighted the benefits of collaboration between the Bank, federal and state police and legal authorities, and how such a collective effort can be very effective in the disruption of counterfeit production and distribution in Australia.

Introduction

The Reserve Bank is responsible for all aspects of the production and issuance of Australian banknotes. It works to ensure that the public has confidence in their banknotes as a means of payment and a secure store of wealth. Accordingly, the Bank aims to prevent counterfeiting, which can damage the public's confidence in physical currency, leading to social and economic costs. To that end, the Bank operates a Counterfeit Examination Laboratory (CEL) to examine and monitor counterfeit currency in Australia. All counterfeit banknotes seized and detected in Australia are sent to the CEL for examination, and the CEL works closely with the Australian Federal Police and state police around

Australia to support the investigation of counterfeiting crimes.^[1]

Counterfeiting is governed by the *Crimes (Currency) Act 1981*, which prescribes a number of offences, including, but not limited to, making, possessing and passing (technically known as 'uttering') counterfeit money.

Law enforcement intervention has successfully shut down many counterfeiting operations and, over the past few years, has been an important contributor to the decline in counterfeiting rates (Ball 2019).^[2] Most recently, in July 2019, the 2 counterfeiters responsible for the production of a group of high quality \$50 and \$100 counterfeit banknotes^[3], were sentenced for a range of crimes, including

possessing, passing and making counterfeit currency. Known as 'Source 37' to the Bank and 'Operation Gridline' to other stakeholders such as New South Wales Police and the Australian Federal Police (AFP), this investigation was a good example of successful collaboration with the state police forces, the AFP and the Commonwealth Director of Public Prosecutions (CDPP) which allowed each agency involved to utilise their specialised skills.

High-level timeline of events

Counterfeits from Source 37 were first detected in small numbers at the beginning of 2017, with the number detected then picking up in April and May. The source was however quickly shut down, with the counterfeiters responsible having been arrested by August of that year (Figure 1). If it had not been shut down when it was, the impact would have been significantly greater.

In the months prior to the arrest of the counterfeiters, the Bank saw more than 3,000 counterfeits from Source 37, with a notional face value of \$290,000. The numbers of counterfeits from Source 37 were rising rapidly month on month (Graph 1). The Bank formally designated the counterfeits it was receiving as having come from the same counterfeiting source in May 2017. Following this designation, a technical analysis report was prepared by the counterfeit examination team. This involves an in-depth analysis of the security features the counterfeiters have attempted to replicate, as well as techniques and materials used to produce the counterfeits. These reports are provided to law enforcement to aid investigations.

Due to both the speed at which the number of counterfeits detected escalated, and their high quality, by June 2017, the Bank considered the matter to be significant enough to warrant being referred to the AFP for investigation (see Box A:

Crimes (Currency) Act 1981 and Relationship between the RBA and AFP). Shortly after, in August 2017, NSW Police, who were subsequently in contact with the AFP, made the arrests. Both agencies worked together to prosecute the offenders in conjunction with the CDPP.

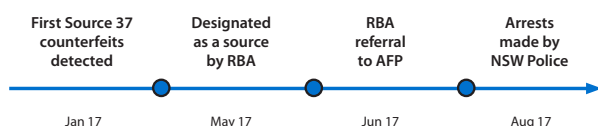
While the rapid increase of these counterfeits alone was of concern, at the time of the arrests, the police also seized enough counterfeiting material to produce more Source 37 counterfeits than the total face value of all counterfeits detected in Australia in 2019.

Key characteristics of Source 37 counterfeits

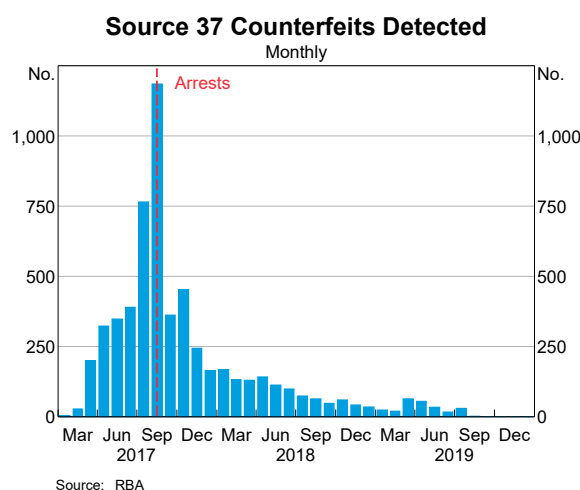
Quality and quantity

An important task of the Bank's CEL is to analyse the counterfeit banknotes it receives and rate their quality. These ratings give the Bank and police an indication of how closely the counterfeiters have successfully (or otherwise) replicated a genuine banknote. The overall quality of Source 37 counterfeits was rated highly. They were printed on plastic, had a very similar look and feel to genuine banknotes and all overt – or visible – banknote security features had been simulated (see Box B: Counterfeit Detection Guidance). It was also clear that they had been produced using techniques that were capable of producing large volumes of counterfeits. Based on the quality, quantity, and methods used, the counterfeits

Figure 1: Timeline of Source 37 milestones



Graph 1



Box A: *Crimes (Currency) Act 1981* and Relationship between the RBA and AFP

The *Crimes (Currency) Act 1981* is Commonwealth legislation which specifies crimes and responsibilities relating to counterfeit currency. Under this legislation, all state, territory and federal police are authorised to investigate counterfeiting offences. As such, the Bank supports all police to pursue counterfeit currency related investigations.

Beyond the legislation however, the Bank and the AFP have also formally agreed the collaborative working arrangements for the centralised management of counterfeit banknotes in Australia. The Bank is responsible for the majority of the administration, examination and analysis of suspect and confirmed counterfeit banknotes, while the AFP is responsible for most of the police liaison and engagement as well as undertaking all law enforcement duties.

The arrangement between the Bank and the AFP provides a clear process for the suppression of counterfeiting in Australia and has led to the successful disruption of a number of counterfeit operations over the years. At the same time, in some circumstances, state police may be better placed to undertake investigations related to counterfeit currency, especially where they are concentrated within a particular state or territory. Therefore the Bank and the AFP also regularly engage with state and territory police to support their counterfeit currency related investigations and bring about successful legal proceedings.

appeared to have been produced by professional-level counterfeiters, with a distribution network and sufficient funding to start up an illegal high-volume counterfeiting business.

The number of Source 37 counterfeits increased rapidly soon after they were first detected, with 4 counterfeits detected in January, 28 in February and 200 in March. At its peak in the month of August, 1,200 Source 37 counterfeits were detected in circulation and sent to the CEL for processing and examination (Graph 2).^[4] The initial estimates suggested that monthly detections of Source 37 were largely in line with the monthly detection rates seen from previous large-volume counterfeiting sources produced using comparable techniques (Graph 3). This implied that Source 37 detections were likely to follow the same path as these previous counterfeiting episodes and continue to rise rapidly. As such, if NSW Police and AFP had not shut down the operation in such a timely manner, it is very likely that the overall quantity and subsequent financial loss to businesses and the community at large would have been significantly greater.

To date, there have been around 5,800 Source 37 counterfeits detected, with a face value of

\$540,000. Although this seems modest (especially compared to the largest source in Australia, which totals over 32,000 and with a face value of \$1.6 million), at the time of the arrests, police also seized enough materials to produce around another 17,500 Source 37 counterfeits. This would have totalled over than \$1.7 million, more than the total face value of all counterfeits detected in Australia in 2019 (\$1.3 million).

Unsurprisingly, the number of counterfeits detected steadily declined after the counterfeiters were

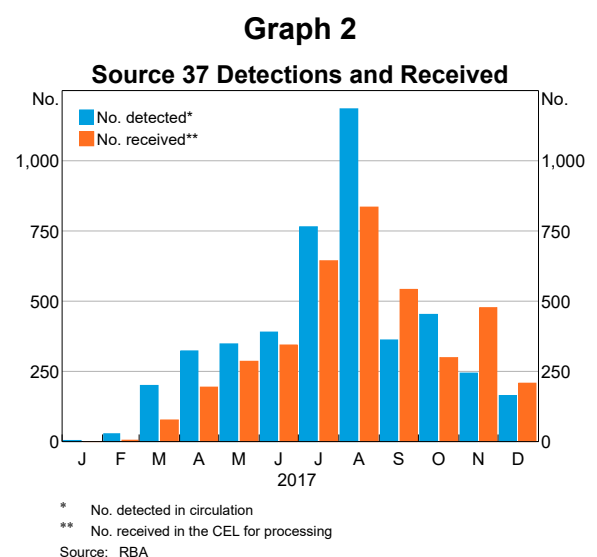


Table 1: Source 37 Counterfeits by State

	NSW	VIC	QLD	SA	ACT	WA	NT
Detections	5,180	321	180	20	15	15	1
Share of total (%)	89	6	3	0.3	0.3	0.3	0.02

arrested and the counterfeiting source was shut down. Notwithstanding this, the CEL has still received, on average, around 50 Source 37 counterfeits per month over the past 12 months, with more than 2,500 received since the August 2017 arrest.

Geographic spread

The majority (90 per cent) of total detections occurred in NSW, although the counterfeits were detected in almost every Australian state and territory (Table 1).

We know little about the distribution network that was used by the counterfeiters, or how the counterfeits were being transported around the country. However, the AFP believe it is likely the majority of the counterfeits were sold to other networks to manage the larger distribution.

Targeted organisations

To date, more than half of all Source 37 counterfeits have been detected by cash-in-transit companies (CITs)^[5] (Graph 4). The remaining counterfeits were largely detected by banks and retail organisations. While we would typically expect more counterfeits to be detected in transactions at retail outlets, the

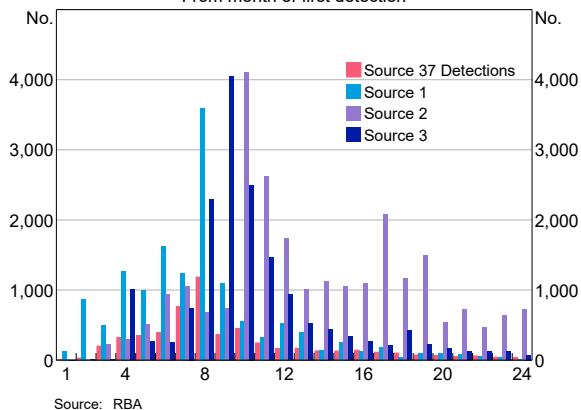
higher-than-average quality of Source 37 counterfeits meant that they were less likely to be noticed at the point of sale and were only detected after being received by a bank or CIT. Banks and CITs are more likely to detect high-quality counterfeits than the general public because they process cash using machines that are able to detect counterfeits and their staff tend to be very experienced in handling cash.

Information collected about the organisation that *first received* the counterfeit indicates that retail businesses were most often recorded as the first *entry point* where the counterfeit officially entered circulation. The first entry point of a counterfeit can differ from its first detection, if the person who first accepted the counterfeit banknote did not realise it was counterfeit at the time and subsequently uses it in another transaction. Four categories of retail organisations – gaming, liquor and hospitality, clothing and department stores, and supermarkets – have accounted for the vast majority of retailers where Source 37 counterfeits were first passed (Graph 5).^[6] The retail organisation breakdown is similar to what we typically see with other counterfeits.

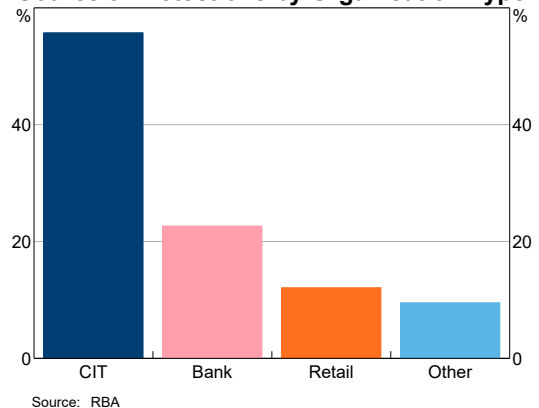
Graph 3

Comparable Counterfeit Sources

From month of first detection

**Graph 4**








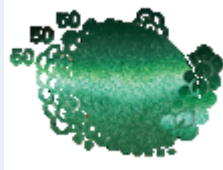
Source 37 Detections by Organisation Type



Box B: Counterfeit Detection Guidance

Australian banknotes are printed on polymer, a type of plastic, and they have a distinctive feel.

Banknotes from the same series have similar security features, though their location and design can vary.

First polymer series		Second polymer series	
			
	Coat of Arms Hold the banknote up to the light to see the Australian Coat of Arms.		Flying bird Tilt the banknote to see a bird move its wings and change colour in the top-to-bottom window.
	Federation Star Hold the banknote up to the light to see the diamond patterns form a seven-pointed star.		Reversing number Tilt the banknote to see a number change direction within the building in the top-to-bottom window.
	Clear window Check that the clear window is part of the banknote and that the white ink cannot easily be rubbed off.		Rolling colour effect Tilt the banknote to see a rolling colour effect. On one side of the banknote it is a prominent patch near the top corner. On the other side it is within a bird shape.
Shared features			
Intaglio print		Feel the distinctive texture of the dark printing. The slightly raised print can be felt by running a finger across the portraits and numerals.	
Microprint		Look for tiny, clearly defined text in multiple locations on the banknote.	
Fluorescent Ink		Look at the banknotes under a UV light to see features fluoresce.	

It is an offence to knowingly possess counterfeit banknotes. Suspect banknotes should be given to State or Federal police. It is important to note that counterfeits have no value – you will not be reimbursed. If they prove to be genuine banknotes, you will receive full value for them.

If you come across a banknote that you suspect is counterfeit:

- handle the suspect banknote as little as possible and store it in an envelope;
- note any relevant information, such as how it came into your possession; and
- report the matter immediately to State or Federal police.

You are well within your rights to refuse to accept a banknote if you have concerns about it.

Additional information about the security features on Australian banknotes can be found at banknotes.rba.gov.au/counterfeit-detection/list-of-security-features/

Law enforcement and Bank coordination

Source 37 counterfeits were referred to the AFP in June 2017. The Bank listed some main areas of consideration in the referral:

- The counterfeits were of high quality and unlikely to be detected by the public or even trained cash users.
- A scalable production process was used and volumes were expected to escalate due to suspected links to crime groups.
- It is often observed that counterfeiting becomes more widespread once the counterfeiters have established that their operation is successful.
- Public confidence in the currency could be adversely affected.

The AFP accepted the referral and began to investigate under the name 'Operation Gridline'.

Arrest

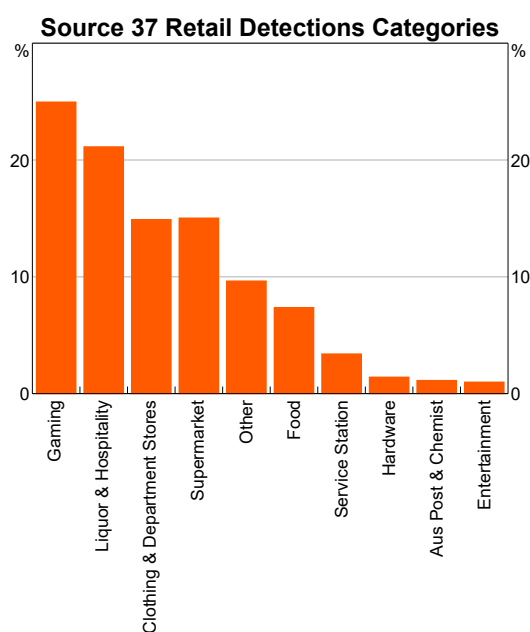
In August 2017, NSW Police executed a search warrant at a property in an inner Sydney suburb. Among other items, they seized 301 counterfeit banknotes (some of which had not been completed), various materials and equipment that could be used to produce counterfeit banknotes as well as drugs and a small amount of ammunition. Following extensive investigations by NSW Police over a number of months, the tenants of the property and alleged counterfeiters, a husband and wife, were charged with a number of crimes including possess, utter (or pass) and make counterfeit currency.

Expert witness statements and advice

An expert witness statement is a legal document prepared by the Bank's document examiners to assist the courts in matters relating to counterfeiting prosecutions and to provide an opinion on if the banknotes in question are counterfeit. An expert witness statement was completed in November 2017 in relation to the 301 counterfeits that were seized by NSW Police during the search warrant. Over the life of Source 37, the CEL completed 29 expert witness statements relating to more than 400 Source 37 counterfeits, for both NSW and Queensland state police and both NSW and Victorian branches of the AFP. State police are typically responsible for prosecuting the offenders in their local areas, but these case files were then fed back to the AFP (and later NSW Police) as additional intelligence during their investigation into the primary production source.

During the investigation the Bank also provided regular reports about Source 37, including, serial number checking, volume totals, geographical information and advice relating to materials,

Graph 5



Source: RBA

products, printers and other inputs being used. This allowed NSW Police to pursue leads in a timely manner and to invest time and effort in investigating all aspects of the counterfeiter's operations and connections. The AFP also provided intelligence and expertise to this investigation.

Legal proceedings

The Commonwealth Director of Public Prosecutions (CDPP) is responsible for prosecutions under Commonwealth legislation, with the point of contact in this case being the NSW Police. Ultimately, in February 2019, the counterfeiters pleaded guilty to all charges. Two of the CEL's expert witness statements were part of this case and were accepted without challenge. One of these related to the examination of the counterfeits and one categorised the quality and quantity of the counterfeits to assist the court in understanding the impact these counterfeits could have in undermining confidence in currency in the community. During sentencing the judge agreed that this was a sophisticated counterfeiting operation and that the quantity and quality of the counterfeits were in the highest range.

The judge highlighted that counterfeiting was a serious crime that impacts public confidence in currency, and that a significant term of imprisonment was appropriate to ensure that there was a deterrent for others who might consider counterfeiting.

In preparing for the legal proceedings associated with Operation Gridline, the Bank identified additional ways to support the legal process and provide a better understanding of the impact or potential impact a high-quality source like this can have on the community. The process also strengthened the Bank's relationship with the CDPP.

Sentencing

The primary counterfeiter's charges of 'make counterfeit currency' and 'possess counterfeit currency' relate to the production of all 301 counterfeit banknotes seized during the search warrant. His charge of 'utter counterfeit currency' related to 3 separate occurrences where he used the counterfeits in transactions (one while on bail).

The maximum sentences that could be imposed for the counterfeiting related offences were:

- Possess counterfeit currency: 10 years.
- Utter counterfeit currency: 10 years.
- Make counterfeit currency: 14 years.

Taking into account the defendants' pleas of guilty and contrition, the judge made the following orders in July 2019:

- The primary counterfeiter was convicted of each offence he was charged with.
- For the 3 counterfeiting offences, the counterfeiter received an aggregate sentence of imprisonment of 4 years, 7 months with a non-parole period of 2 years, 9 months.
- The indicative sentences for the offences were:
 - Possess counterfeit money: 2 years;
 - Utter counterfeit money: 2 years;
 - Make counterfeit money: 4 years.
- The other counterfeiter was convicted of 'make counterfeit currency' and was given an 18-month non-custodial sentence, provided she paid a \$100 fine and was of good behaviour for 18 months. The sentence was considerably less than her husband's and the judge took into consideration her likely deportation as she was a foreign national, her child care responsibilities and the judge's view that she was 'young and impressionable'.

Given the limited number of counterfeits subject to the proceedings, a sentence of 4 years and 7 months is within the range of sentences previously ordered for high-quality counterfeiting in Australia.^[7]

Conclusion

The potential financial losses to businesses and the community in this case were significant, with \$540,000 worth of counterfeits detected in circulation and other material seized indicating that the counterfeiters could have been able to produce more than \$1.7 million in additional counterfeits. The reporting, analysis and forecasting undertaken by the Bank supported timely decision-making for

referral to the police and also supported police investigations and the subsequent prosecution.

The Bank values highly its relationship with both state and federal police and the CDPP. The success of this investigation highlights the importance of

maintaining these relationships and collaborating wherever possible, to utilise each agency's expertise and resources when working to preserve the Australian public's confidence in our banknotes. ✖

Footnotes

- [*] The authors are from the Note Issue Department.
- [1] The Bank's definition of 'seized' is when the police have taken custody of the counterfeit banknotes prior to them entering circulation. A counterfeit is 'detected' if it has been used by a member of the public in circulation and has then been identified as a counterfeit.
- [2] See also Finlay and Francis 2019 for a brief history of currency counterfeiting, detailing the historical counterfeiting incident that led to the federal police taking over primary responsibility for counterfeit investigations.
- [3] These were counterfeits of the first polymer series for which the \$50 and \$100 were released in 1995 and 1996 respectively.
- [4] The monthly numbers of counterfeits detected and counterfeits received differ due to the lag between when a counterfeit is detected in circulation and when it is received by the AFP and CEL.
- [5] In addition to transporting banknotes, CITs also sort banknotes through machines to ensure they are fit for use. They can detect counterfeits in this process.
- [6] The 'original' organisation is defined as the first known point of entry when the counterfeit officially enters circulation.
- [7] While the total number of Source 37 counterfeits made was more than 5,800 (and materials already purchased able to produce significantly more) only those 301 counterfeits seized during the search warrant were included in the charges.

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Ball M (2019), 'Recent Trends in Banknote Counterfeiting', RBA *Bulletin*, March 2019, viewed September 2020. Available at <<https://www.rba.gov.au/publications/bulletin/2019/mar/recent-trends-in-banknote-counterfeiting.html>>.

Finlay R and A Francis (2019), 'A Brief History of Currency Counterfeiting', RBA *Bulletin* September 2019, viewed September 2020. Available at <<https://www.rba.gov.au/publications/bulletin/2019/sep/a-brief-history-of-currency-counterfeiting.html>>.

Governance of Financial Market Infrastructures

Stephanie Bolt and David Meredith^[*]



Photo: Koron – Getty Images

Abstract

Good governance is critical to delivering effective risk management outcomes. Several high-profile reports have underscored this point in recent years, finding governance issues to be at the heart of poor compliance and risk management outcomes in the financial industry. Given the key role that financial market infrastructures (FMIs) play in supporting efficient and stable markets, the RBA has a strong interest in promoting good governance within these entities. This article explores aspects of FMI governance and how governance arrangements can help promote the safe and effective delivery of FMI services.

Introduction

FMIs

FMIs provide a broad range of services that underpin well-functioning financial markets. These services include the timely clearing and settlement of obligations between counterparties, assisting institutions in the management of risks and helping to coordinate actions in the event of a market participant's default. FMIs typically process large volumes of transactions and have strong inter-connections with banks and other financial

institutions, helping to bring networks of counterparties together.

FMIs are often considered systemically important in the markets in which they operate. This means the distress or failure of an FMI could impose material losses on the real economy. An ineffective or inefficient FMI can introduce risk into the financial system directly – by increasing the probability that it will fail, or indirectly – by discouraging participants from using its services in favour of alternative, riskier arrangements (CPMI-IOSCO 2012).

The financial system is in a constant state of change. All FMIs, but particularly those considered systemically important, play an important role in supporting that change and safely facilitating innovation in the markets they serve. This includes addressing the technological imperative to constantly review and innovate their systems and processes, so that FMIs remain well-placed to deliver efficient, effective and reliable services over time.

While there are different types of FMIs, the ones most often deemed to be systemically important are clearing and settlement (CS) facilities and high-value payment systems. CS facilities are systems that clear and settle transactions in securities such as bonds and equities and in derivative instruments such as options and futures. In Australia there are two types of CS facility – central counterparties (CCPs) and securities settlement facilities.^[1] High-value payment systems are the systems used to settle wholesale interbank payments, the very large payment obligations between banks and other financial institutions.

Governance

Governance refers to the accountability framework and arrangements used to direct and control an organisation. It encompasses how an organisation determines its objectives, implements strategies to achieve those objectives and monitors and reacts to the outcomes. Governance frameworks set out the relationships between an organisation's owners, board of directors (or equivalent), management and other relevant parties. For an FMI 'other relevant parties' can include the FMI's direct participants, its participants' customers, other interdependent FMIs, regulatory authorities (given their responsibility to protect the public interest) and the broader market.

Robust governance arrangements that have been well implemented in practice will help to set appropriate norms, culture and incentives in an organisation. They also provide a solid foundation for management of risk and innovation. Several high-profile reports have underscored the importance of governance in recent years. For example, governance issues featured prominently in the findings of Australia's 2019 Royal Commission

into Misconduct in the Banking, Superannuation and Financial Services Industry, with the commission's final report noting 'deficiencies of culture, governance and risk management within entities' (Hayne 2019, p 12). Similarly, a 2018 report by the Australian Prudential Regulation Authority (APRA) highlighted the impact of shortcomings in governance, culture and accountability frameworks at the Commonwealth Bank of Australia (CBA) (APRA 2018). More recently, ineffective assurance and oversight processes contributed to compliance issues at Westpac, resulting in significant penalties (AUSTRAC 2020).^[2]

Regulatory framework

The legal and regulatory requirements relating to FMI governance are determined by the relevant jurisdiction's legislative and regulatory frameworks. In Australia, the Australian Securities and Investments Commission (ASIC) and the RBA have separate but complementary responsibilities for the supervision of CS facilities. ASIC also has a range of responsibilities for the regulation of all Australian companies in areas such as corporate governance. Each agency adopts a regulatory approach that is focused on its distinct sphere of responsibility. The agencies also cooperate closely with each other and other members of the Council of Financial Regulators.

Consistent with the RBA's mandate to promote financial stability, the RBA has a role in overseeing and supervising the types of FMIs noted above; CS facilities and high-value payment systems. In relation to oversight of CS facilities, the RBA has established regulatory standards.^[3] These standards are based on a set of core principles for FMIs that have been widely adopted by international financial authorities – the Principles for Financial Market Infrastructures (PFMI) (CPMI-IOSCO 2012).^[4] Due to its systemic importance, Australia's high-value payments system is expected to observe the PFMI and is assessed accordingly.^[5] When assessing the compliance of an FMI's governance arrangements against the relevant standards, the RBA also considers broader concepts of good practice, such as international guidelines, the work of other

regulators, relevant private sector benchmarks and industry best practice.

FMI can operate within a broad range of ownership and organisational structures, sometimes reflecting jurisdictional legal requirements. These range from government-owned infrastructures to commercial entities operating within larger corporate groups. In the context of governance, each form of ownership will have specific benefits and challenges, although the expected outcomes in terms of governance and compliance remain consistent across FMIs, regardless of ownership structure. The PFMI explicitly recognise these various challenges, noting that FMIs may need to focus particular attention on certain aspects of their governance depending on their organisational arrangements.^[6]

While this paper discusses the principles underlying the RBA's regulatory standards, it does not revise any existing regulatory expectations, principles, standards or guidance already in effect, and it does not impose any new requirements.

Establishing a framework

All organisations face challenges ensuring that their governance frameworks are, and remain, fit for purpose. The critical role that FMIs play in supporting well-functioning markets increases both the complexity and importance of this challenge, particularly in situations where the FMI has a public interest obligation in relation to minimising systemic risk. The following discussion explores some of the complexities involved in FMI governance and ways these can be addressed in order to promote good governance outcomes.

Structure and responsibilities

A key function of a governance framework is to articulate, and clearly differentiate, the roles and responsibilities across the organisation, including those of the board (or equivalent body) and board committees. While the board is responsible for strategic direction and governance of an organisation (and remains accountable for general oversight of the entity), day-to-day operations and decision-making are carried out by executive management consistent with parameters set by the board. Particularly when an FMI is larger or more

complex, it is neither practicable nor appropriate for the board to make every decision, or directly oversee all aspects of the FMI's operations. However, the board remains ultimately accountable and is expected to exercise active stewardship in its oversight of the FMI (ASIC 2019).

An effective governance framework will clearly set out any arrangements for delegation of authority. Where an FMI operates within a broader ownership group, the governance framework will need to address the relationship between the board of the FMI and other boards in the ownership group.^[7] It should also clarify how and when feedback from external stakeholders will be taken into account in decision-making.

Board composition

The structure and composition (including size) of an FMI's board should be tailored to the scale and complexity of the FMI's activities so that the board is best placed to effectively fulfil its roles and responsibilities. Effective boards bring together a balance of skills, experience and knowledge. A good balance of these attributes will better equip the board to approach its decision-making and oversight responsibilities with a level of constructive challenge and inclusive debate.^[8]

Reflecting the role it plays, the optimal balance of skills, experience and knowledge for an FMI's board will include the relevant strategic and technical knowledge required to understand and challenge management across a range of issues. This is particularly relevant in the area of risk management, where boards have a responsibility to assess, and ensure processes are in place to identify, emerging risks. All FMIs also face the challenge of managing infrastructure renewal and technological change in a rapidly evolving environment. Addressing these challenges in a way that prioritises stability and minimises risk requires board members who are well-equipped to understand, question and challenge the solutions put forward.

In order to scrutinise and challenge management effectively, it is important that a well-functioning board is able to step back and independently assess the information that comes to it. The PFMI note that independence from the views of management

usually requires having non-executive members on the board, including independent board members, as appropriate. While requirements for non-executive and independent board members may be of benefit, they do not diminish the obligations that apply to all directors (including executive directors) in discharging their duties, including in regard to exercising objective and independent judgement.

Board independence can erode over long periods of tenure, for example as a result of continued interaction with long-standing executives (O'Connell 2017). In discussing board independence, the PFMI note that boards may need to consider establishing maximum limits on how long a member can serve.

As noted, it is not unusual for an FMI to be operating within a broader ownership group. In these situations, the FMI's board may include representation from the parent entity, or there may be board members common to the FMI's board and the boards of other group entities. It is important that FMI board members understand their duties as a director and their role in the corporate governance framework, and exercise independent judgement in the interests of the FMI. These interests would include meeting any legal obligations of the FMI in the relevant jurisdiction.

To provide a direct input into the decision-making process, some FMIs include representation from certain stakeholder groups on their boards, such as participant representatives. There are also examples in some jurisdictions of requirements for board positions (voting or non-voting) to be reserved for representatives of the public interest, such as regulatory authorities (Russo *et al* 2004). However, it is more common for FMIs to facilitate stakeholder input into the decision-making process through other channels (see 'Stakeholder engagement' below).

Delegation

Typically, an FMI's governance framework will mandate a number of board committees to allow subgroups of board members to consider key issues in greater detail.^[9] Effective board committees can facilitate greater discussion and challenge on

complex or technical topics. For example, an FMI governance framework will generally include a risk committee with responsibility for overseeing risk management and advising the board on the FMI's overall risk tolerance and strategy, reflecting the importance of ensuring that the risks borne by FMIs are managed safely, effectively and in a way that promotes financial system stability.

In addition to board committees, a governance framework will set out processes to delegate authorities and responsibilities from the FMI board to management. Effective delegations are clear and have well-understood lines of accountability, with the roles and responsibilities of the board clearly delineated from the role of management. As noted in APRA's inquiry into the CBA, 'One of the challenges facing all Boards is ensuring strong oversight of senior management whilst still preserving an appropriate separation from managerial responsibilities' (APRA 2018, p 14).

Any delegation of authority, whether from the board to board committees or to management, should be transparent and well documented. Formalising and documenting roles, responsibilities and reporting lines can help reduce the risk that the board may not have sufficient oversight of certain aspects of the FMI's activities, or be fully cognisant of the risks it faces, and will help ensure separation of responsibilities (see 'Oversight of risk management' below). Regular reviews of documented responsibilities, accountabilities and delegations can also help mitigate the risk of processes becoming overly dependent on experts or key personnel.

Objectives and strategies

The objectives and strategies of an FMI should be clear, cohesive and well understood. A lack of clear objectives or strategies is likely to result in inconsistent interpretation across different managers in the organisation. Similarly, an entity's objectives will be undermined if the incentives faced by board members and management are not appropriately aligned with those objectives.

The FMI's board is ultimately responsible for setting the FMI's objectives and strategies. Discharging this

responsibility requires a clear framework for delegation of decision-making that sets out the ultimate accountability for decisions and the board's role in overseeing and reviewing management's implementation of the strategies. The board is also responsible for ensuring its objectives and strategies are well understood by management, across the FMI and by the FMI's stakeholders more broadly.

Ensuring an FMI's objectives and strategies appropriately balance the interests of its ownership, the interests of its stakeholders, and its financial stability obligations to the public in the jurisdictions in which it operates can be a complex task. This can be particularly challenging given that the highly interconnected and often cross-border nature of FMIs can result in them being systemically important in several markets and/or jurisdictions at once (Russo *et al* 2004). In practice, achieving a balance that appropriately reflects stakeholder and financial stability interests will mean that the objectives and strategies of an FMI place a high priority on promoting the safety and effectiveness of the FMI's operations (CPMI-IOSCO 2012).

Stakeholder engagement

The central role of FMIs in the financial system means that their decisions can have a significant impact on their participants and the broader market. This underlines the importance of an FMI's governance framework facilitating meaningful and timely engagement with all relevant stakeholders (CPMI-IOSCO 2012). As noted above, depending on the type of FMI, relevant stakeholders may include (but are not limited to) direct participants, participants' customers, other interdependent FMIs, regulatory authorities and the broader market. Members of this broad stakeholder group may also include entities that compete with the FMI or (more commonly) with the FMI's related entities.

There can be strong interdependencies between FMIs and their key stakeholders, particularly their participants. Participants can bring risk to an FMI, for example, the risk that the participant might default on its obligations to the FMI. Participants can also bear risk through mutualisation, meaning a participant can bear some of the risk brought to the

FMI by other participants. One situation where this can take place is when CCPs collect resources from all of their participants to hold in a 'default fund' that could potentially be used if an individual participant were to fail. CCPs can also have arrangements in place to call additional contributions from participants (other than the one that failed) if the default fund and other prefunded resources are not sufficient to cover the losses from a default.

An FMI's engagement with stakeholders must therefore be a two-way process: transparency and disclosure from FMIs is important to provide stakeholders with the information required to properly assess the risks they face from participating in the FMI; and timely and meaningful feedback from stakeholders can improve the ability of the FMI to integrate and balance the interests of all relevant stakeholders in corporate decision-making.^[10]

Box 1 considers some of the mechanisms available for achieving this.

No matter which mechanism for stakeholder engagement is employed, it is important that the engagement takes place early enough for the FMI to consider the feedback in its decision-making process and isn't treated as (or perceived to be) an afterthought or a 'tick the box' exercise. To mitigate this risk or perception, the FMI needs processes in place to gather and report feedback to relevant executives, committees and the board in a way that is reliable, accurate and timely.

Implementing the framework

Establishing a framework that sets out appropriate policies and procedures is a pre-requisite for good governance, but the objectives of governance will be met only if policies and procedures are implemented well in practice. In this section, we discuss three areas that contribute to the overall effectiveness of FMI governance: board-level decision-making, management of conflicts of interest and oversight of an FMI's risk management function.

Effective decision-making

If a board is to provide meaningful challenge to management, it needs access to reports and

Box 1: Consultation practices of CS facilities

Depending on the nature of the markets they serve, CS facilities can have participants that range from major global investment banks to small local brokerage firms. The issues CS facilities consult on also vary substantially, examples include seeking feedback on participants' and clients' business needs, upgrading technology, launching new products and services, or providing technical updates on evolving risk management practices. It is good practice for a CS facility to establish, and make use of, consultation mechanisms tailored to the requirements of the various audiences and issues in question. Common practices for achieving this can include:

- establishing participant committees, user groups and other advisory committees. This mechanism can be particularly effective for periodically engaging groups of stakeholders on a distinct theme. Examples include stakeholder committees to solicit feedback on new products, changes to risk management practices, or upgrades to user interfaces.
- leveraging business-as-usual interactions. CS facilities often make use of regular business interactions to solicit feedback, either formally or informally. In some instances, these engagements may be facilitated through the use of designated relationship managers.
- undertaking public consultations. This process is well suited for gathering feedback from a broad range of parties. For example, a significant strategic change that could affect the functioning or structure of a major product market has the potential to affect a broad number of market participants. Undertaking a public consultation on this issue could help the CS facility understand the direct, and indirect, implications of the proposed change.
- scheduling ad hoc bilateral engagements with specific stakeholders. This channel can be particularly useful when there are concerns around the confidentiality of the information being disclosed.

information that are thorough, accurate, clear and balanced. In practice, the effectiveness of information reported to the board is likely to reflect a number of factors, including: the quality of communication between the board and management; the judgement of senior management; the effectiveness of an FMI's reporting and accountability frameworks; and the resourcing of related functions.

The importance of thorough and accurate reporting was highlighted in APRA's inquiry into the CBA, which found that 'gaps in reporting and metrics hampered the effectiveness of the Board and its Committees' (APRA 2018, p 14). While the material provided to a board needs to include all relevant information, ideally it will also highlight the key issues for board consideration. This was recognised in ASIC's review of board and officer oversight of non-financial risk at Australia's largest financial services companies, which found evidence that

material issues were sometimes buried within excessively long reports to boards (ASIC 2019, pp 27–30).

There can also be a risk that material presented to a board lacks balance. For example, APRA's inquiry into the CBA highlighted issues of overly 'optimistic senior leadership' with a 'propensity for positive and assuring messaging' (APRA 2018, pp 14–15). An FMI board's responsibility to challenge management includes satisfying itself that recommendations from management are not overly optimistic and adequately consider the full range of potential risks.

As noted above, effective boards bring together members with an appropriate balance of skills, experience and knowledge. For an FMI to fully benefit from the range of skills, experience and knowledge on a board, there needs to be a constructive culture that encourages input and challenge from all members. This issue was noted in

APRA's inquiry into the CBA, which considered the risks of 'filtering of information through a single Director' and impediments to utilising 'the collective experience of Directors' fully (APRA 2018, p 17). In this regard, an important function of the chair of an FMI's board is to foster an inclusive culture that promotes constructive challenge by all members of the board. Board members should also have an ability to influence the agenda as appropriate.

To ensure effective decision-making over time, it is important that there are processes in place to review, develop and maintain the effectiveness of the board. Typically, this is achieved through board and director effectiveness reviews, succession planning and programs for continuous learning. To promote accountability, boards can periodically arrange for internal audit to review the adequacy of information provided to support board-level decisions. Reviews can also be undertaken to assess whether there is evidence that individual directors are making a positive contribution to decisions taken by the board.

The outcomes of these reviews can highlight whether management is making appropriate use of the board's guidance and expertise and whether the board is engaging with issues in an effective manner. For example, a review might consider whether management is bringing a meaningful set of options to the board or whether the options being put to the board tend to be limited to those favoured by senior management (in particular the chief executive).

Conflicts of interest

Conflicts of interest can occur in situations where the interests of board members, executives or other staff are misaligned or incompatible with the objectives and strategies of the FMI. In Australia, FMIs and their directors have statutory obligations to have arrangements in place to identify, address and manage any possible or perceived conflicts of interest. While an obvious example of a conflict of interest would be a situation where a board member has a material competing business interest with the FMI, an FMI's governance framework also needs to have processes in place to identify and

mitigate other types of conflicts, some of which are outlined below.

Intragroup conflicts

As noted, FMIs often operate within a larger corporate group. For example, it is not uncommon to integrate trading (exchange) and post-trade (CS facility) infrastructure within the same group. This structure can bring operational and cost efficiencies. It can also have risk management benefits for the FMI, such as increased knowledge and data flows between an exchange and a CS facility, which may enhance the CS facility's ability to manage and understand its risk exposures (Committee on Payment and Settlement Systems 2010).^[11] However, the PFMI emphasise the need for an FMI that is part of a larger corporate group to consider the potential for conflicts of interest that may arise as a result of the ownership structure.^[12]

Under the PFMI, an FMI is expected to have appropriate controls, procedures and oversight in place to ensure that decisions taken in accordance with the FMI's objectives (including its obligations to manage risk on behalf of its stakeholders and in a way that promotes financial stability) are not compromised by any competing interests, including the financial interests of the parent group. Management of intragroup conflicts can be more complex in situations where the FMI's board includes representatives from the parent group, or there are board members that sit on multiple boards within the group. It can be also be challenging for the board of the parent entity to balance the objectives of the different entities across the group appropriately, particularly where they need to take an FMI's financial stability obligations into consideration.

In this regard, international regulators have considered hypothetical scenarios where a CCP could face pressure from its parent group to weaken its risk management standards in order to generate additional trading and clearing business (Committee on Payment and Settlement Systems 2010).^[13] Another challenging scenario could be a situation where a CS facility becomes financially unviable, and a conflict emerges between the CS facility's public interest obligation to maintain

access to its services and the desire of the parent group to minimise losses, including by curtailing access or ceasing to provide services.

Reporting lines

Conflicts of interest can emerge in situations where an FMI's reporting lines act as a disincentive for staff to fulfil their responsibilities. For example, a key function of internal audit is to provide an independent assessment of the FMI's risk management processes and internal controls. This can include reporting on the ability of executives to operationalise effective risk management processes and controls in their areas of responsibility. There is the potential for conflicts of interest to arise if internal audit's reporting lines or compensation outcomes run through, or are solely determined by, those executives. To avoid this outcome, the PFMI indicate that internal audit should have sufficient resources and independence to fulfil its function, including by ensuring that the audit function has direct access to the board through a separate reporting line.^[14]

Remuneration

Conflicts of interest can also arise when incentives in executive compensation policies are not consistent with promoting the long-term interests of the FMI. Highlighting this point, the Financial Stability Board (FSB) found that links between short-term profits and employee bonuses at financial institutions in the lead-up to the global financial crisis contributed to excessive risk-taking and insufficient regard being paid to the long-term health of the organisation (Financial Stability Forum 2009). More recent reports have also identified strong links between compensation practices and poor regulatory, compliance and conduct outcomes among Australian financial institutions (Hayne 2019).

Reflecting these considerations, the PFMI note that an FMI's compensation policies should be consistent with best practices and based on the FMI's long-term achievements – in particular in the areas of safety and efficiency. This aligns with the FSB's Principles for Sound Compensation Practices, which note that there should be appropriate

consistency between compensation pay-out schedules and the time horizons over which relevant risks could materialise (Financial Stability Forum 2009).^[15] To further incentivise appropriate risk management behaviour, boards can include risk management and compliance items within key performance indicators (KPIs) so that promoting good risk and compliance practices will affect remuneration outcomes for senior staff.

Oversight of risk management

Unlike many other organisations, FMIs often manage risk not just on their own behalf but also on behalf of their external stakeholders and the broader financial system. This makes it particularly important for FMIs to have strong risk management processes.^[16] FMIs may also need to strike an appropriate balance between reducing risk and promoting participation. Achieving the appropriate balance requires an effective framework and good judgement — Box 2 below considers one example where this is the case.

Many organisations utilise the 'Three Lines Model' to help organise their structures and processes related to governance and risk management (The Institute of Internal Auditors 2020).^[17] This model can help to clarify roles and responsibilities within the organisation, promote a culture of risk ownership among frontline managers and facilitate consistent communication within the business.

While implementation of this model will vary across organisations, it generally has the following structure:

- **First line** roles are those that are most directly involved in the provision of products or services to the clients of the organisation. This generally includes management and certain related support functions. In addition to their designated business function, the first line is also responsible for establishing and maintaining appropriate risk management structures and processes; ensuring compliance with legal, regulatory and ethical expectations; and maintaining communication with the governing body.

- **Second line** roles are those that provide assistance with managing risk, and may be blended with, or separated from, the first line. They can include enterprise risk management roles, or other more specialised roles focused on compliance, internal controls, IT security, sustainability or quality assurance, among others. These roles can provide support, monitoring and challenge to the first line. However, under the model, responsibility for managing risk should remain with the first line.
- **Third line** roles are often held by internal audit. These roles are responsible for providing independent and objective assurance on the adequacy and effectiveness of the entity's governance and risk management.

Although the board and board committees are not included in the three lines, their responsibility for setting the objectives and risk appetite of the organisation is pivotal as they oversee the operations of the three lines and ensure the model is operating within the risk parameters established by the board. The board has a key role in fostering a culture of accountability and ethical behaviour at the top of the organisation and overseeing work to ensure that this culture is embraced throughout the entity. The board and board committees (typically the risk, audit and remuneration committees) also play an important role in ensuring that: the roles and responsibilities of the different lines are clearly defined and documented; there is appropriate coordination and communication between each line; and incentives are appropriately aligned with the organisation's risk strategy.

The Three Lines Model is widely used by FMIs, although there can be some additional complexity that needs to be taken into account in its implementation. For example, where the core business of an FMI is risk management (e.g. for a CCP), there is a greater risk of ambiguity between first and second line roles. This is because operational managers and risk areas can both have responsibilities associated with identifying, implementing and evaluating risk processes.

To mitigate the risk of ambiguity between the lines it is particularly important for FMIs to clearly define,

document and ensure broad understanding of how the model is intended to operate, which internal roles are associated with each line and where accountabilities lie. To further mitigate this risk, an FMI may choose to increase oversight from the third line or the board. This can include, for example, requiring the escalation of issues earlier than might otherwise be the case.

Conclusion

Good governance is critical to delivering effective risk management outcomes and ensuring that FMIs remain well-placed to deliver efficient, effective and reliable services over time. Several high-profile reports have underscored this point in recent years, finding governance issues to be at the heart of poor compliance and risk management outcomes in the finance industry.

Given the key role that FMIs play in supporting a stable and effective financial system, the RBA has a strong interest in promoting good governance in the FMIs it oversees. An effective FMI governance framework will allow the interests of all owners and users, as well as other stakeholders (including those representing the public interest), to be given appropriate consideration in the decision-making process. It is also important that the governance framework adopted by an FMI is able to mitigate possible conflicts of interest, including those that could arise from the ownership or organisational structure under which the FMI operates. ✖

Box 2: CCP clearing risk management

Certain FMI face specific risk management and governance challenges stemming from the roles they play in the financial system. For example, CCPs accept a unique level of counterparty risk when they insert themselves between the original buyers and sellers of financial contracts and guarantee that the obligations of each side will be met. In doing so, CCPs can increase confidence among market participants that their transactions will be honoured, even in the event that the original counterparty to the trade or contract were to fail. This can in turn help increase activity in the market, reduce monitoring costs for participants, and reduce risk in the system as a whole. It is important for these entities to strike the appropriate balance between reducing risk and promoting participation.

One example of this challenge relates to the total resources the CCP holds in case of default. In implementing their risk management frameworks, CCPs usually pool their own capital with resources collected from participants to protect themselves from possible losses in the event of a participant default. If the CCP faces relatively complex risks or is considered systemically important in multiple jurisdictions, the PFMI indicate that these total resources should be sufficient to cover the default of the CCP's two participants (including their affiliates) that could potentially cause the largest losses for the CCP in extreme but plausible market conditions.

There is some subjectivity in interpreting which market conditions fit the definition of 'extreme but plausible', and therefore in determining the total resources a CCP must hold. If the market conditions considered by the CCP are too severe (increasing the resources to be collected from participants), the costs for participants will be higher, reducing incentives to use the CCP and potentially increasing risk in the system as a whole. However, if the scenarios considered are not severe enough, the CCP could face uncovered exposures in a default event, exposing both itself and the broader market to the risk that it could fail.

Given the importance of the resourcing decision, and the board's ultimate accountability for it, particular attention must be paid to the governance arrangements used to determine which scenarios the CCP determines to be 'extreme but plausible'. For example, these arrangements can stipulate how and when the board engages on the issue, how related decisions are documented (e.g. in the board's risk appetite statement), and how the board will be kept abreast of developments and risk exposures arising from its chosen settings. Given the cost and risk implications for participants and other stakeholders, the CCP's governance arrangements should also consider how stakeholders can provide input into – and remain informed of – relevant decisions.

Footnotes

- [*] The authors are from Payments Policy Department and would like to thank Suchita Mathur and colleagues in the RBA's Payments Policy Department for valuable comments during the preparation of this article.
- [1] Previous *Bulletin* articles outline the role of CCPs in the financial system and the different risks they face (Manning and Hughes 2015) (Hancock, Hughes and Mathur 2016).
- [2] A 2018 review of ASX's technology governance and operational risk standards undertaken by ASIC and the RBA also highlighted the importance of governance, concluding that improvements in ASX Group's technology governance and operational risk management capabilities were required for ASX to fully meet regulatory expectations (ASIC 2018) (RBA 2018).
- [3] The RBA's Financial Stability Standards for CS facilities can be accessed here: <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/>
- [4] For further information on how the PFMI apply in Australia see <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/principles/implementation-of-principles.html>
- [5] For further information on the RBA's oversight of systemically important payment systems, see <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>
- [6] For example, the PFMI note that 'An FMI that is, or is part of, a for-profit entity may need to place particular emphasis on managing any conflicts between income generation and safety' (CPMI-IOSCO 2012, p 27).
- [7] For example, FMIs often establish board and committee charters setting out the respective roles, responsibilities and authorities of each entity within the group.
- [8] To mitigate key person risk and help ensure the board's composition continues to meet its needs over time, governance frameworks often include succession planning policies and processes for periodic self-assessments to identify any emerging skill sets that may be required as the FMI's business and operating environment evolves.
- [9] Concepts of independence, skill and expertise are relevant in determining the most appropriate composition of board committees.
- [10] An FMI's minimum requirements for transparency and public disclosures of these arrangements are often set via regulation. For example, there are a range of quantitative and qualitative disclosures required as part of most regulatory frameworks.
- [11] Other possible benefits for the CS facility, noted by the Committee on Payments and Settlement Systems, include improved operational risk management outcomes from integrating operational processes between entities within the group, lower costs of establishing an operational link between trade and post-trade infrastructure, an enhanced capacity to introduce new or niche products and secure access to the stream of trades it can clear and settle.
- [12] Other FMI ownership structures can also give rise to specific conflicts of interest that need to be managed. In this regard the PFMI note that central bank-owned FMIs may need to address possible or perceived conflicts associated with being both an FMI operator and overseer, for example by separating the operator and oversight functions into different organisational units.
- [13] Possible examples of relaxing risk management standards could include weakening participation criteria to allow less credit-worthy participants to make use of a CCP's services or decreasing the amount of default resources collected from participants to lower the cost of using the CCP's clearing services.
- [14] Establishing a dual reporting line from the chief audit executive to both senior management and the board is also consistent with international standards published by the Institute of Internal Auditors (IIA 2016).
- [15] Additional guidance on managing conflicts of interest in setting executives' variable pay and promoting consistency between these arrangements and the long-term interests of the company, in particular during the COVID-19 pandemic, can be found in ASIC Information Sheet 245 (ASIC 2020).
- [16] Key risks for FMIs cited in the PFMIs include legal, credit, liquidity, general business, custody, investment, and operational risks.
- [17] The 'Three Lines Model' is an updated version of the 'Three Lines of Defence Model'.

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Secondary Market Liquidity in Bonds and Asset-backed Securities

Julie Guo and Zhan Zhang^[*]

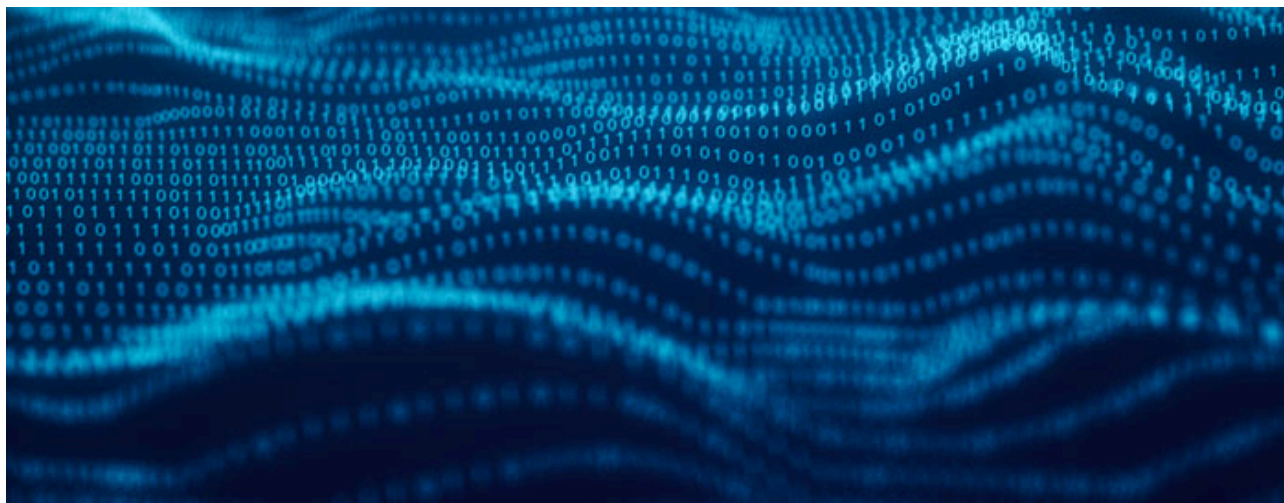


Photo: MR.Cole_Photographer – Getty Images

Abstract

Liquidity is an important measure of health and stability in financial markets. This article assesses liquidity in markets that trade Australian fixed income securities by analysing market turnover using data for the period 2015–17, which was one of relative calm. We find heterogeneity across these markets. Australian and State Government bonds have higher turnover than other securities. Turnover was generally higher for larger bond lines, but not universally so. In particular, there is relatively high turnover in a number of small asset-backed security lines.

Introduction

Market liquidity, which is defined as the ability to trade securities with ease and at low transaction costs, is an important measure of health and stability in financial markets. Illiquidity in markets hampers efficient price discovery and access to funding from those markets by issuers. Low liquidity can also amplify disturbances in the financial system. These effects can be particularly extreme in times of financial distress, representing a major risk for issuers, investors and regulators. This was illustrated most recently during the outbreak of COVID-19.

In the weeks following late February 2020, concerns over the global spread of the virus and the associated economic costs escalated. This saw widespread falls in the value of risky assets, such as shares, and led to a sharp increase in volatility in financial markets as a range of investors needed to raise cash to reduce leverage, meet margin calls, and meet redemptions. These factors contributed to a deterioration in the functioning of financial markets all over the world, as liquidity in these markets dried up. Government securities, which are commonly considered safe assets, also experienced sell-offs and market dysfunction, resulting in sharp increases in yields. This flowed through to other financial markets, given the role government

securities play as benchmarks for other securities. In particular, illiquidity in the key benchmark market for US Treasuries further contributed to increased market stress.^[1]

In Australia, liquidity for government bonds also deteriorated as measured by a number of metrics (Finlay, Seibold and Xiang 2020). In addition, non-government bond markets became stressed, with bid-ask spreads increasing significantly through early to mid March.^[2] By late March and early April, liquidity conditions in fixed income markets began to gradually recover, both in Australia and internationally. These recoveries were supported by central bank policies, which included asset purchases and expanded liquidity operations, in many jurisdictions, including Australia.

In this article, we look at turnover ratios in secondary Australian fixed income markets under more normal conditions, using a unique settlement dataset.^[3] Historically, transactions in the Australian bond market have been relatively opaque, partly because most secondary market trading is transacted outside of electronic platforms, making it difficult to access a central source of transaction records.^[4] We measure turnover using data from Austraclear, the settlement system for Australian dollar fixed income securities in Australia. This dataset covers the period from 2015–17, so our data do not cover the most recent period of market turmoil, but they do give us a baseline against which to assess the recent episode when more data become available. The data from 2015–17 reveal structural differences in turnover across Australian fixed income markets. These differences are relevant to understanding the behaviour of fixed income markets, under both normal and stressed conditions.

While this article focusses on turnover, and we acknowledge that there is debate on whether it is a good proxy for liquidity, previous research has suggested that higher turnover is correlated with other aspects associated with liquidity, such as narrower bid-ask spreads.^[5] Therefore, although turnover ratios may not directly capture all aspects of liquidity, they can be used as an indicator of liquidity.

Data and methodology

We use Austraclear settlement data from December 2015 to August 2017. Security settlements are lodged in Austraclear when counterparties exchange a security registered in Austraclear for cash.^[6] We separate bonds into different asset classes or ‘markets’ based on their issuer type and analyse a broad range of markets. The markets we analyse include non-bank corporations (corporate bonds); banks; non-residents issuing in the Australian debt market (Kangaroo bonds, also known as Kangas); Australian State and Territory Governments (Semi-government securities or semis); and the Australian Government (AGS). Additionally, we also examine the asset-backed securities (ABS) market.

The data do not represent all trades in the wholesale debt market – they only include what is settled between counterparties that have an Austraclear account.^[7] Moreover, transactions of Australian dollar-denominated securities may be settled through clearing systems other than Austraclear, such as Euroclear or Clearstream.

Our focus is on the longer-term fixed income market, so we only consider securities with an original maturity of over one year. Trades within the first week of issuance are excluded, as these trades may represent activity associated with primary market issuance. We add to the Austraclear dataset the bonds that do not trade at all. These non-trading bonds were sourced from the Reserve Bank of Australia (RBA) databases of outstanding bonds. For ABS, we consider only marketed deals (as opposed to ABS that are retained on the issuer’s balance sheet). Where applicable, figures and graph data have been weighted by the face value of the bond.

This combined dataset was used to construct a number of trade-based liquidity metrics such as the turnover ratio, which is the value of a security traded over a period of time, divided by the total value outstanding of that security. For example, if \$100 million of a bond trades in a month and the bond had \$1 billion outstanding, then the monthly turnover ratio would be 10 per cent.

Table 1: Trades Frequency and Size

	Trades per Bond Monthly average	Average Trade Size (\$m) ^{(a)(b)}
AGS	211.0	49.7
Semis	28.0	26.6
Non-government		
Asset-backed	0.2	14.0
Banks	2.8	10.4
Corporates	2.2	2.9
Kangaroo bonds	4.4	7.0

(a) Face-value weighted

(b) Average size of trade, given that the bond has traded (i.e. excludes non-traded)

Sources: ASX DataSphere; RBA

The dataset contains private repos (or ‘repurchase agreements’), as they cannot be easily identified for exclusion, but excludes repos with the RBA for which there is a reliable flag in the data.^[8] A repo involves one party selling a security to another party, then buying back the security on a predetermined date in the future and at a specified price. These transactions are akin to a collateralised loan, and so do not represent genuine secondary market trading. Government securities are regularly used in private repo transactions, hence the analysis may overstate the secondary market turnover of these securities.

The data exclude derivatives and related markets, where turnover is often higher than in the market of the underlying asset (Cheshire 2016). These derivatives offer an alternative source of exposure to the underlying security, and their liquidity is also contributing to the overall liquidity of Australian fixed income markets.

Aggregate turnover

Based on the Austraclear dataset, overall, the monthly average turnover ratio of Australian dollar fixed income securities was 50.3 per cent. That is, the volume of fixed income securities traded over a

month was, on average, around a half of the size of the Australian market. However, there was a significant amount of heterogeneity across markets. For example, non-government securities had an average monthly turnover ratio well below 10 per cent, significantly lower than that of government securities (Graph 1). Among these non-government bonds, ABS were the least liquid, with a turnover ratio of just 1 per cent. There was also a large degree of heterogeneity across markets in the proportion of bonds that did not trade at all. Nearly all AGS were traded, but 76 per cent of ABS in face value terms did not trade during the sample period (Graph 2).

Trade frequency (i.e. the number of bonds transacted over a period of time) followed the same pattern as the turnover ratio, with government securities having the highest number of trades. Traded AGS and semis also had the largest average trade size. This is indicative of higher liquidity in these markets, since participants do not need to split their trades into smaller packets to avoid price movements. Among other securities, there was little relationship between trade size and other measures of liquidity (Table 1).

Turnover in government securities

The average turnover ratio of AGS was 116 per cent. This was driven largely by non-indexed AGS, which had an average turnover ratio of 120 per cent and make up around 90 per cent of the AGS market, compared with the 50 per cent turnover of inflation-indexed AGS. That said, inflation-indexed AGS had notably higher turnover than both semis and non-government securities, despite their significantly smaller market size.

Bond size and liquidity

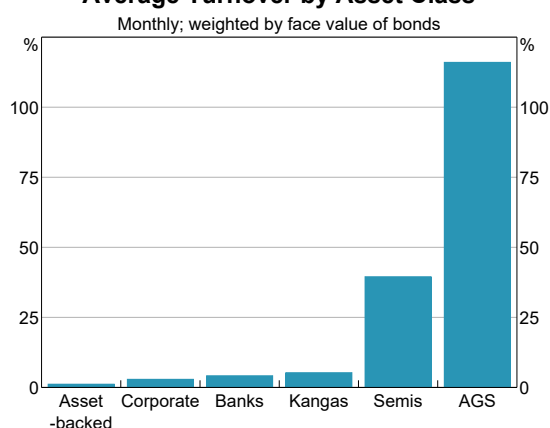
For most markets, turnover increased with the size of the bond's outstanding value (Graph 3). This relationship was most apparent within AGS. Large-

sized AGS (with over \$1.5 billion outstanding) had a turnover ratio of around 120 per cent, over 3 times higher than medium-sized bonds (between \$0.5 and \$1.5 billion outstanding). Although, this may reflect the larger size of non-indexed AGS relative to indexed AGS. However, in the ABS market, smaller bond lines had higher turnover ratios due to their larger trade size as a share of outstanding. There was little relationship between size and turnover ratios in the Kangaroo bond market. Bonds with higher outstanding values traded more often across all markets (Graph 4).

For ABS, the highest-rated tranches were most likely to have traded at least once. High turnover ratios were more likely to be observed in tranches with

Graph 1

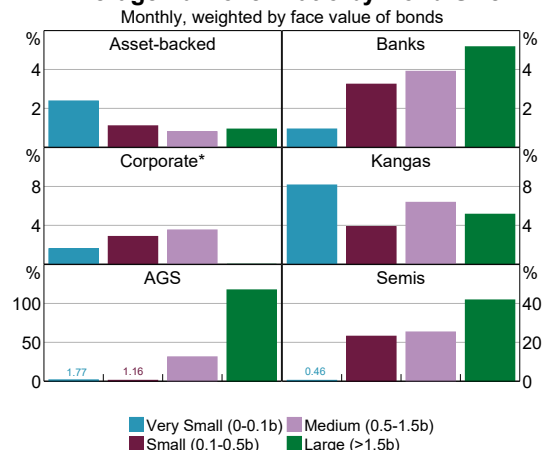
Average Turnover by Asset Class



Sources: ASX DataSphere; RBA

Graph 3

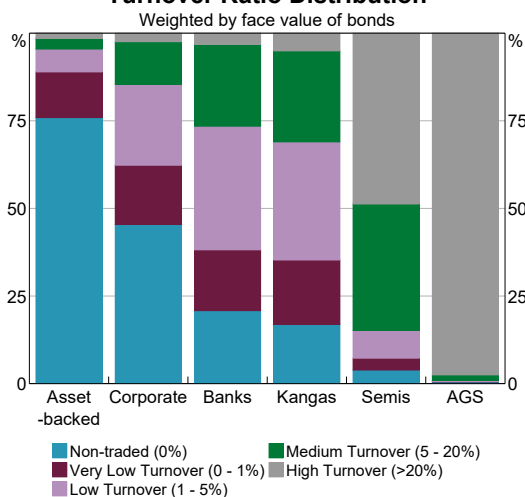
Average Turnover Ratio by Bond Size



* No corporate bond had an amount outstanding larger than \$1.5b
Sources: ASX DataSphere; RBA

Graph 2

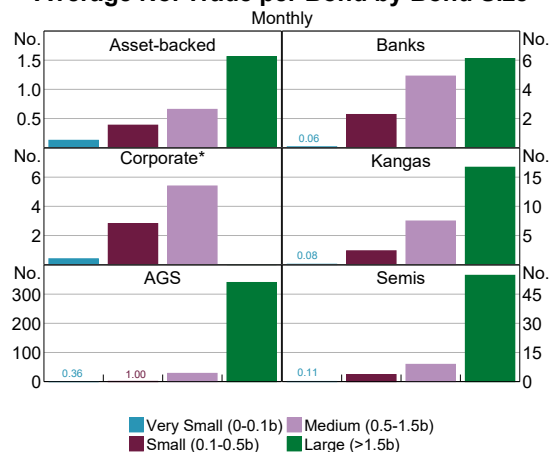
Turnover Ratio Distribution



Sources: ASX DataSphere; RBA

Graph 4

Average No. Trade per Bond by Bond Size

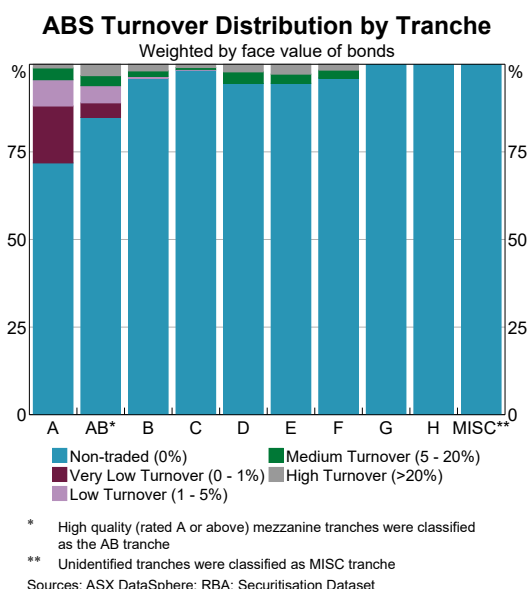


* No corporate bond had an amount outstanding larger than \$1.5b
Sources: ASX DataSphere; RBA

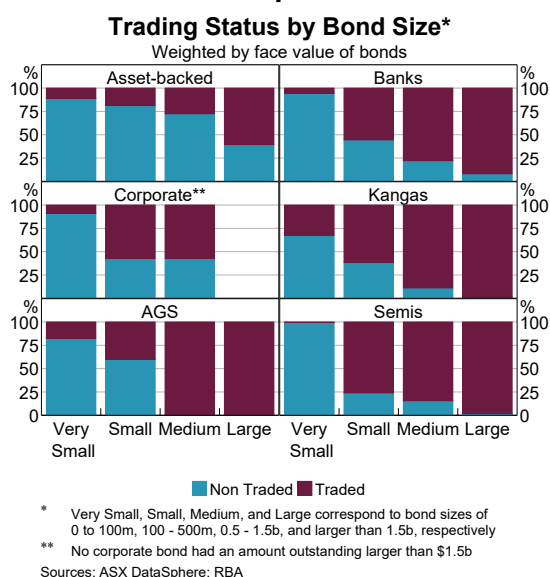
higher ratings and some level of subordination (although the differences were small) (Graph 5).

A consistent relationship was also seen between size and likelihood of trading across all bond markets, where smaller bonds were much more likely to have never traded in the sample period (Graph 6). This may be because increased information flow associated with larger bonds may make them easier to find and trade (Gündüz *et al* 2018). This result was particularly noticeable for semis. Most semis under \$100 million never traded; in contrast, 98 per cent of semis larger than \$1.5 billion traded.^[9]

Graph 5



Graph 6



Committed Liquidity Facility eligibility and turnover

The Basel III regulations require banks to hold a sufficiently large value of high-quality liquid assets (i.e. AGS and semis in Australia) to meet a minimum liquidity coverage ratio (LCR). These assets – which can be easily sold by banks to meet liquidity needs – act as buffers against adverse financial events, enhancing the overall banking system's resilience. Given the historically insufficient supply of AGS and semis in the domestic market, the Reserve Bank's Committed Liquidity Facility (CLF) enables certain authorised deposit-taking institutions (ADIs) to use a contractual liquidity commitment from the RBA towards meeting their LCR. Under this arrangement, the RBA commits to provide funds to these ADIs, up to a specified amount and if certain conditions are met, to support them through periods of liquidity stress. These CLF funds are provided by a repo secured by eligible securities. During 2015–17 – the period covered by our dataset – CLF-eligible securities included higher-quality bank bonds, ABS (AAA rated), and AAA rated Kangaroo bonds, as well as AGS and semis.

On average, turnover ratios for CLF-eligible non-government securities were higher than their non-eligible counterparts. However, there was considerable variation across markets. CLF-eligible Kangaroo bonds and bank bonds had turnover ratios that were double those of ineligible securities, while there was no significant difference in turnover between eligible and ineligible ABS (Graph 7). These relationships should not be viewed as causal – there may be other features of the bonds such as credit ratings and collateral quality that influence liquidity.

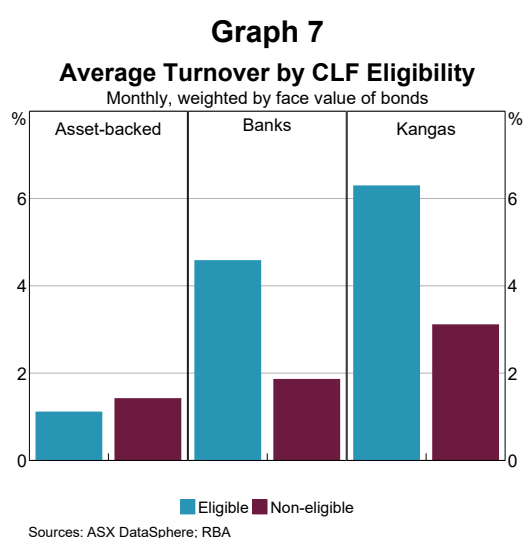
Comparisons to international markets^[10]

The turnover ratio for the US Treasury market fell significantly in 2007, and was broadly unchanged between 2009 and 2013 (100 to 125 per cent per month) (US Treasury 2013). Quantity-based liquidity metrics (e.g. turnover) suggested market depth declined for US Treasury Bonds from 2013 to 2016, even though price-based metrics (e.g. bid-ask spreads) remained relatively unchanged during this period (Committee on the Global Financial System 2016). German Government bonds had

substantially lower turnover ratios of around 28 to 38 per cent between 2009 and 2017, while turnover ratios of UK Government bonds were around 30 to 45 per cent for the same period (Association for Financial Markets in Europe 2018). Turnover decreased in both of these European markets between 2013 and 2016, before reversing some of the decline in 2017. These trends are generally consistent with developments in the Australian Government bond market (Cheshire 2016). European market participants listed constrained balance sheets, reduction of the numbers of market makers participating in the market and regulatory factors as likely drivers of lower liquidity (European Systemic Risk Board 2016). Furthermore, Elliott (2015) attributes the decline in market liquidity in recent years to a reversal of high liquidity conditions

prior to the GFC and regulatory constraints (such as the Basel III capital accords).

As in Australia, turnover ratios for non-government securities were significantly lower than for government securities in international markets. Similar to the Australian fixed income market, the average monthly turnover in the UK corporate bond market ranged from 1.7 per cent to 5 per cent between 2009 and 2013 (Aquilina and Suntheim 2016). US corporate bonds had turnover ratios of around 4 to 8 per cent between 2009 and 2013, slightly higher than turnovers observed in the Australian corporate bond market. Nonetheless, it should be noted that the relatively low corporate bond turnovers in some international markets were affected by the strong growth in the primary markets that led to a larger stock of outstanding bonds (Committee on the Global Financial System 2016).



Conclusion

In the Australian fixed income market, government-issued securities had substantially higher turnovers than their non-government counterparts. There was also a significant proportion of securities which rarely or never traded through Austraclear. For private sector investors, this likely limits their investment universe while also having implications on the liquidity risks of their portfolios. The RBA also considers these liquidity risks as many of these securities are held as collateral for the purpose of repo agreements. ❖

Footnotes

- [*] The authors were in Domestic Markets Department at the time of writing. The authors would also like to thank Alice Lam and Richard Finlay, as well as Fereshta Nawabi, Irene Guimatsia and Kate Watterson from the Australian Securities and Investments Commission for their helpful comments and suggestions.
- [1] See RBA (2020).
- [2] Bond market makers aim to make money by selling bonds for a little more than they bought them for, while minimising their exposure to changes in bond yields. This difference in selling versus buying price is captured by the bid-ask spread. If market makers are confident that they can quickly sell a bond that they have purchased, they can offer a relatively narrow bid-ask spread with confidence, whereas if they might have to hold the bond for a substantial period of time they need to quote a wider bid-ask spread to cover the costs of holding the bond and to insure themselves against adverse price movements.
- [3] A transaction is considered ‘settled’ when the legal ownership of the security is transferred to the buyer. The turnover ratio is defined as the value of a security traded over a given period divided by the total value outstanding for that security.
- [4] See Debelle (2016). Primary markets are markets where securities are issued for the first time. Once issued, securities are traded between investors on the secondary market.
- [5] See McCauley and Remolona (2000). Also, Lien and Zurawski (2012) notes that trade- and order-based measures (e.g. bid-ask spread) mostly provide similar conclusions, but can indicate inconsistent results during periods of market stress.
- [6] The data only include securities traded for cash, i.e. ‘delivery versus payment’ transactions. Austraclear also allows ‘free of cash’ transactions and ‘delivery versus delivery’ transactions but these are not included in the dataset used here. These transactions are used when pledging collateral or for securities lending.
- [7] For example, if a counterparty does not have an Austraclear account, then their securities are registered in a custodial Austraclear account (e.g. Commonwealth Bank Nominee Account). If this counterparty were to transact with another counterparty using the same custodian, the security may remain in the custodian’s account. In this case, no transaction would appear in Austraclear. These missing transactions may lead to an upward bias in our estimates of non-trading bonds.
- [8] The flag is there for all repo transactions, but we are confident that it only accurately identifies repos with the RBA. An algorithm for capturing non-RBA repos in transactional data was developed by Garvin (2018). However, this algorithm was not used in this article for ease of exposition.
- [9] Note that many of the smaller bond lines for semis are private placements held by a single investor. They usually do not intend to trade them, which helps to explain the high proportion of non-traded semis in this size category.
- [10] Caution should be exercised when comparing our estimates to international estimates in this section, due to differences in methodology. For example, inclusion or exclusion of repos and non-traded bonds in calculating turnover ratios, as well as definitional differences may confound the comparisons. While this implies that turnover in level terms may be less comparable, general trends and patterns may be more relevant when comparing between countries.

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The COVID-19 Outbreak and Australia's Education and Tourism Exports

Philipp Grozinger and Stephanie Parsons^[*]



Photo: martin-dm – Getty Images

Abstract

International travel restrictions to contain the spread of COVID-19 and precautionary behaviour on the part of travellers have significantly disrupted the movement of people globally. Education and tourism were Australia's fourth and fifth largest exports prior to the pandemic, and exports of these services have fallen sharply. This article documents the effects of the virus on Australia's education and tourism exports and draws on information from the Reserve Bank's regional and industry liaison program to discuss the uncertainties around the medium-term outlook once international travel resumes.

Introduction

International travel restrictions to contain the spread of COVID-19 and precautionary behaviour on the part of travellers have significantly disrupted the movement of people across international borders. Australia, like most countries, has been severely affected. An average of 28,000 international visitors arrived in Australia every day for leisure, study or work in 2019. These visitors spent around \$65 billion on Australian goods and services in the year, accounting for 13 per cent of exports and 3 per cent of GDP. The collapse in international arrivals since the outbreak of COVID-19 has had a

devastating impact on Australian businesses that service these visitors and has contributed to the sharp fall in economic activity over the first half of the year.

We begin this article by presenting a snapshot of Australia's education and tourism exports prior to the pandemic. We then document the effects of COVID-19 on these exports and draw on information from the Reserve Bank's regional and industry liaison program to discuss the medium-term outlook once international travel resumes. The medium-term outlook for education and tourism exports is highly uncertain.

On the eve of the pandemic

Global demand for education and tourism in Australia grew solidly in the decade prior to the COVID-19 pandemic.^[1] A range of factors contributed to this growth, including rising household disposable income (particularly in Asia), a relaxation of travel restrictions and visa requirements in some countries, and increased access to affordable air travel. Australia's inbound air capacity increased by 50 per cent between 2010 and 2019, and policy changes contributed to an almost fourfold increase in airline capacity directly between Australia and China (Graph 1) (Productivity Commission 2015).

Australia's education exports totalled \$40 billion in 2019. This included \$17 billion in tuition fees paid by international students and \$23 billion in international students' living expenses while they studied in Australia. China has accounted for one third of Australia's education exports over the past few years (Graph 2). According to liaison contacts in the education industry, the desire to obtain a qualification in English from a reputable institution was a common reason that students from China chose to study in Australia. Growth in education exports to China eased somewhat between 2017 and 2019, which liaison contacts partly attribute to increased competition for international students from other English-speaking countries, such as the United Kingdom and Canada. Meanwhile, the number of international students from South Asia, particularly India and Nepal, has

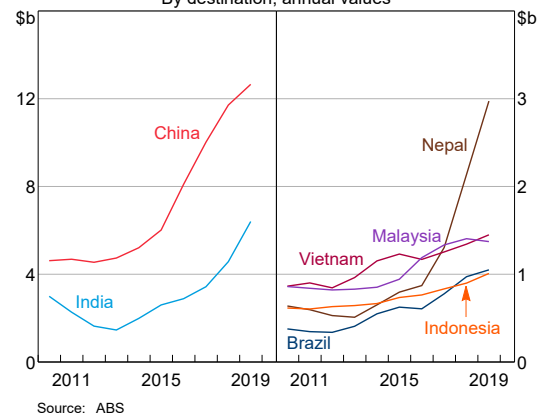
increased strongly from a lower base. Liaison contacts note that South Asian students have found Australia's post-study work arrangements appealing; over 40 per cent of all temporary graduate visas granted in 2019 were to Indian or Nepalese graduates (Graph 3).^[2]

Australia also exported around \$23 billion in tourism services in 2019. Tourism includes travel to Australia for a range of personal reasons, such as holidays and visiting friends and relatives. The value of tourism exports to China has grown strongly over the past decade, overtaking New Zealand and the United Kingdom to become Australia's largest destination for tourism exports (Graph 4). The difference in the value of tourism exports across countries reflects differences in the number of visitors from each country as well as average spend per traveller. For example, Australia had more leisure visitors from

Graph 2

Education Exports

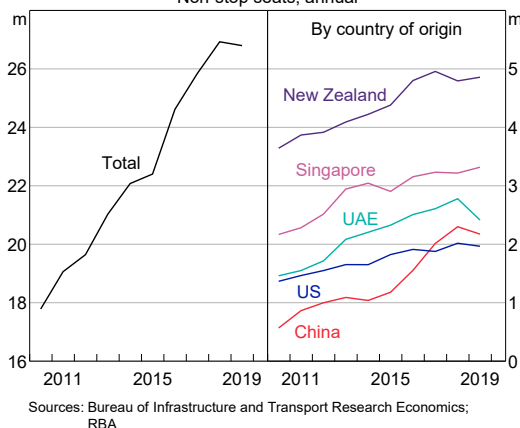
By destination, annual values



Graph 1

Inbound Passenger Seats

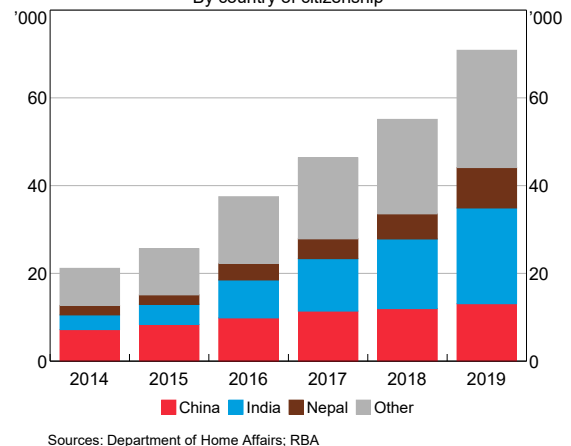
Non-stop seats, annual



Graph 3

Temporary Graduate Visas Granted

By country of citizenship



New Zealand than China in 2019 but Chinese leisure visitors spent, on average, 2½ times as much per person in Australia.

The COVID-19 pandemic began as Australia's tourism sector was still dealing with the aftermath of one of the worst bushfire seasons on record.^[3] The bushfires in late 2019 and early 2020 had a devastating effect on many regional communities and disrupted tourism during the usually busy summer holiday period. Although the affected regions relied more on domestic tourism than international tourism, liaison contacts reported that international media coverage of the fires had damaged Australia's reputation as a safe place to visit. Contacts expected this to have an adverse effect on international tourism for 6–12 months.

International travel restrictions

Early 2020

On 1 February 2020, Australia introduced restrictions on non-residents arriving from mainland China in response to the outbreak of COVID-19. Short-term visitor arrivals were around 20 per cent lower in February relative to the previous year (Graph 5). Travel restrictions affected Chinese international students planning to commence their programs in February and March, as well as continuing students who had travelled home for Chinese New Year. At the time the restrictions were imposed, more than half of student visa holders from China were outside of Australia (DESE 2020). Some Chinese students subsequently entered

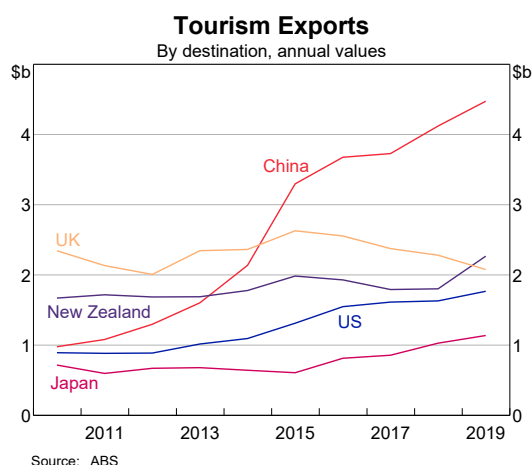
Australia by quarantining in a third country for two weeks, but a significant number remained overseas. Those students unable to enter Australia chose to either defer their studies or study online from China. Consequently, education exports declined sharply in the March quarter. In addition to providing flexible study options for students unable to get to Australia (including online), educational institutions extended some financial support to international students affected by the pandemic.

Full border closure

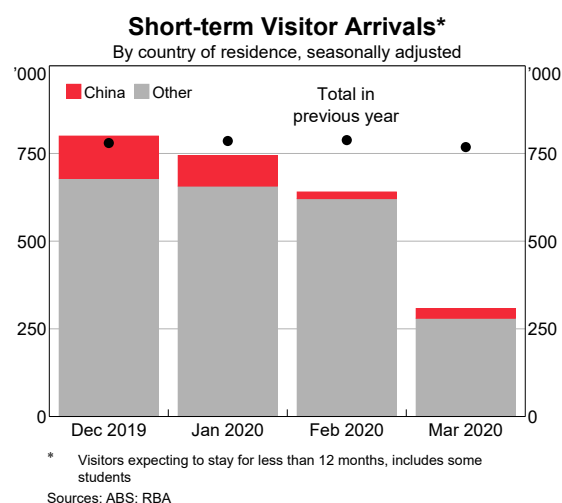
As the virus spread to more countries, travel restrictions were expanded to include arrivals from Iran (1 March), South Korea (5 March) and Italy (11 March), before Australia's border was ultimately closed to all non-resident travellers on 20 March. By the start of April, most international tourists had left Australia, causing tourism exports to collapse to close to zero in the June quarter (Graph 6). This had a large and immediate impact on many Australian businesses and their workers. Liaison contacts reported a collapse in demand for businesses reliant on international travellers, such as airlines, hotels and experience providers, and also noted that these businesses stood down staff and postponed non-essential spending to preserve liquidity.

International travel restrictions had a less pronounced effect on education exports because the majority of international students who were in Australia at the start of March chose to remain in the country. However, education exports still

Graph 4



Graph 5



declined by a further 6 per cent in the June quarter. Domestic lockdown measures likely weighed on international students' discretionary spending, while a small number of students returned to their home country and either deferred their studies or chose to study online. Liaison contacts also reported that some international students reduced their study loads. Overall, the decline in education and tourism exports subtracted around 1½ per cent from GDP over the first half of 2020.

Ongoing effects

Australia's education exports have fallen further in the second half of the year. The number of international student enrolments has declined, driven by a much smaller midyear intake than usual. The size of the fall in new enrolments (commencements) has varied across different types of programs (Graph 7). The midyear intake for higher education programs was about one third lower than in 2019. Although international students were not able to travel to Australia, university liaison contacts reported that some international students already in Australia enrolled in a degree after completing a pathway program, while others started studying online outside of Australia. In contrast, the midyear intake for vocational education and training programs was similar to that in 2019, driven by demand from students still in Australia. Meanwhile, the midyear intake for shorter programs, such as English language and foundation

programs that often serve as pathways to higher education or vocational programs, was about 70 per cent lower compared with 2019.

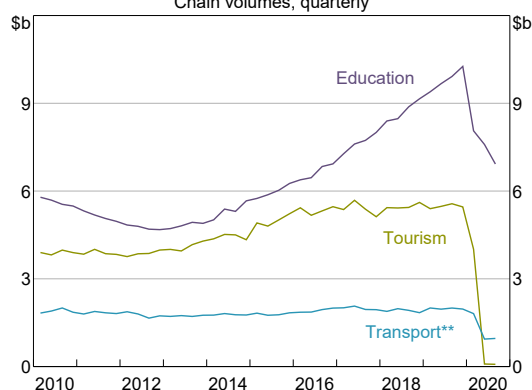
The continued take-up of online study by international students is expected to provide some support to education exports while international borders are closed. A relatively small number of international students could also enter Australia through pilot programs. These programs are likely to be targeted at continuing students who are already studying online outside of Australia. However, most liaison contacts still expect international student enrolments to fall further in 2021 if travel restrictions remain in place. Many universities have cut expenses, including labour costs and non-essential investment, to partly offset expected revenue shortfalls in 2020 and 2021.^[4]

Tourism exports will not pick up until international travel restrictions are materially lifted and potential international tourists become confident about travelling abroad. In the meantime, the lack of international tourists will continue to severely affect Australian businesses that typically rely on international visitors. Liaison contacts have reported that some regional areas, such as Cairns, the Gold Coast and Uluru, attracted a particularly high share of international tourists prior to the pandemic.^[5]

Some tourism businesses have benefited or expect to benefit from a pick-up in demand from domestic tourists who are unable to travel overseas. Overall, Australian tourists typically spend about twice as

Graph 6

Education and Tourism Exports*
Chain volumes, quarterly



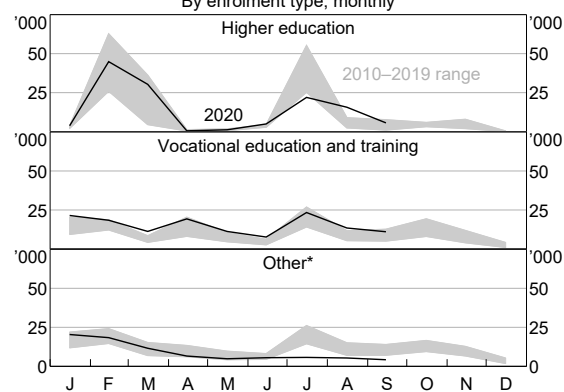
* Reference year is 2018/19; seasonally adjusted by the RBA up to and including March 2020, original figures for June and September 2020

** Includes passenger transport exports, such as international visitors travelling to Australia on an Australian airline

Sources: ABS; RBA

Graph 7

International Student Commencements
By enrolment type, monthly



* Includes English Language Intensive Courses for Overseas Students, non-award and school

Sources: Department of Education, Skills and Employment; RBA

much abroad as international tourists spend in Australia. However, liaison contacts have noted that Australian domestic tourists have tended to have different preferences and spend far less, on average, than international tourists. The recent introduction of the 'trans-Tasman bubble' has allowed New Zealanders to travel to parts of Australia, although few short-term visitors are expected while quarantine requirements in New Zealand for returned travellers remain in place.

After travel restrictions are lifted

The baseline forecasts presented in the November *Statement on Monetary Policy* assumed that travel restrictions will remain in place until around the end of 2021. However, the speed of the recovery in education and tourism exports remains highly uncertain, and the unwinding of restrictions will ultimately depend on progress controlling the virus globally and/or advances in medical treatments. This section outlines the key factors likely to influence Australia's education and tourism exports in the period after travel restrictions are lifted.

Australia will remain an attractive destination ...

Australia will still be an appealing destination for international students and tourists when international travel resumes. Liaison contacts have noted that overseas news coverage of Australia's management of the virus has been favourable, enhancing the country's reputation as a safe destination. Liaison contacts in the education industry have not seen any change in the perceived quality of Australian qualifications, and students are reportedly eager to return for face-to-face learning and the experience of living in Australia. In the tourism sector, liaison contacts have reported some pent-up demand for leisure travel to Australia, particularly to visit friends and relatives after a long period of separation. Increased interest in outdoor experiences and visiting natural landmarks, where it is easier to practise social distancing, could also see Australia remain a popular destination for holidaymakers in the medium term.

... but demand might take time to recover

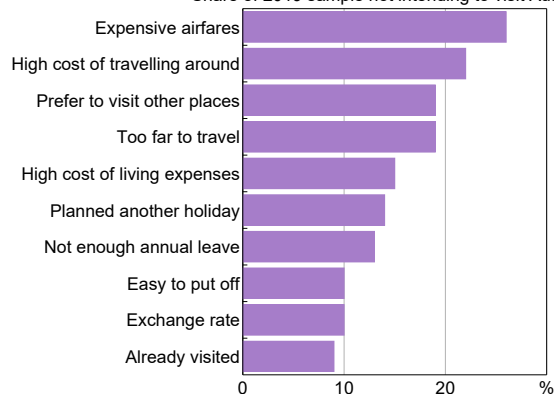
The global economic downturn brought about by the pandemic has resulted in lower household income, higher unemployment and increased concerns about job security in economies that are key sources of international tourists. This will likely weigh on international tourism even once borders reopen, with economic activity in major tourist markets not expected to return to its pre-pandemic path for at least a few years.^[6] Some potential tourists may choose cheaper, local holidays or divert spending to other goods and services. These substitution effects could be particularly pronounced for Australia compared with other countries, given Australia was considered to be a relatively expensive destination before the pandemic (Graph 8).

Liaison contacts have also been concerned that the economic effects of the virus in many South Asian countries (particularly India) could require students to look for cheaper alternatives.^[7] Labour market conditions in Australia will also be a key consideration for these students. Census data indicate that over three quarters of Indian and Nepalese holders of student visas were in the Australian labour force in 2016 (Graph 9). Therefore, a lack of part-time work opportunities in Australia – in line with broader spare capacity in Australia's labour market – could weigh on demand for education exports. The availability of graduate job opportunities will be a consideration for students

Graph 8

Barriers to Visiting Australia*

Share of 2019 sample not intending to visit Australia



* Includes respondents from 11 major tourist markets

Source: Tourism Australia

intending to work in Australia after completing their studies.

More broadly, the virus could lead to more cautious attitudes towards travel in the medium term. This could result in reduced demand for longer-distance travel in particular; for Australia, this could adversely affect demand from major markets, including the United States and Europe.^[8]

Regardless of demand, fewer flights might be available initially

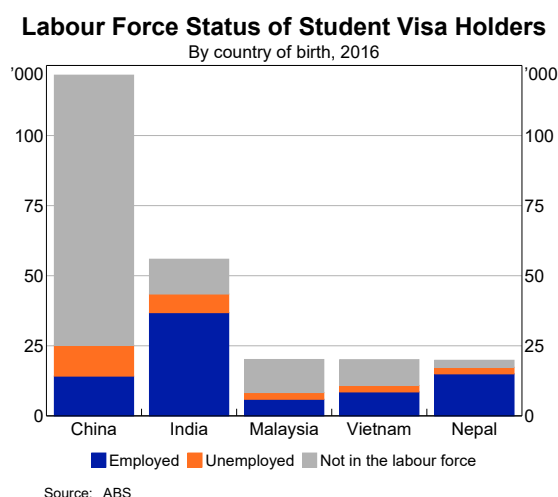
Long-haul aircraft fleets are likely to be smaller for some time as a result of the pandemic. In response to a collapse in revenue, many airlines – including those servicing the Australian international market – have cut costs by scrapping some aircraft earlier than planned, ordering fewer new aircraft and not renewing aircraft leases (Graph 10). In turn, aircraft manufacturers have reduced production targets for the next few years by around one third. Production rates might not be able to ramp up quickly enough to restore fleets, at least initially, if the recovery in demand is stronger than expected. In addition, liaison contacts have been concerned that skilled

labour shortages could slow the recovery in airline capacity; for example, if some pilots have been unable to maintain flying hours to meet strict aviation requirements for recent experience.

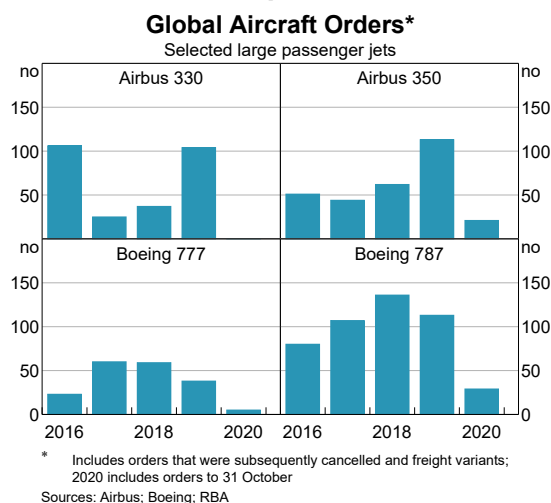
Conclusion

Prior to the COVID-19 pandemic, education and tourism exports had grown to become important contributors to economic activity in Australia. The collapse in international arrivals in 2020 has led to a sharp fall in Australia's exports of education and tourism, and no material recovery is expected until international travel restrictions are eased. Thereafter, the speed of the recovery is also highly uncertain. Information from the Reserve Bank's liaison program suggests that pent-up demand is likely to provide an initial boost to education and tourism exports when borders reopen. However, the pandemic will have lingering negative effects on demand for travel and long-haul airline capacity. Given their importance to the economy, monitoring developments affecting education and tourism exports, and their effects on the recovery, will remain a key focus for the Bank's liaison program in the period ahead. ✎

Graph 9



Graph 10



Footnotes

- [*] The authors completed this work in Economic Analysis Department. The authors thank Paul Gardiner and David Lancaster for their input and colleagues in the Regional and Industry Analysis team for conducting the liaison meetings that informed this work.
- [1] For more on international trade in services prior to the pandemic, see Rickards (2019).
- [2] Subject to eligibility criteria, recent university graduates can usually stay in Australia for 2–4 years to gain work experience. Extensions will be available for graduates from regional universities from 2021.
- [3] See RBA (2020) for a discussion of the economic effects of the bushfires.
- [4] The Australian Government's Higher Education Relief Package announced in April provided guaranteed funding and regulatory relief for higher education providers. State governments have also announced a range of measures to assist universities, including funding for research and loan facilities to support cash flow.
- [5] The Australian Government is supporting regions affected by the loss of tourists through initiatives such as the Building Better Regions Fund and the Recovery for Regional Tourism Fund.
- [6] See Dobson and Hooper (2015) for a discussion of how past changes in economic conditions have affected demand for travel to Australia.
- [7] However, a growing population and rising living standards are likely to support education exports to South Asia in the long run (Alston *et al* 2018; Fairweather and Sutton 2020).
- [8] The International Air Transport Association (IATA) is forecasting global passenger traffic to return to 2019 levels in 2024 (IATA 2020).

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Long-term Unemployment in Australia

Natasha Cassidy, Iris Chan, Amelia Gao and Gabrielle Penrose^[*]



Photo: skynesher – Getty Images

Abstract

Are your future employment prospects affected by past periods of unemployment? And does it matter how long you were unemployed? The average duration of unemployment has increased steadily over the 2010s. At the same time, the rate at which unemployed people are able to find a job has slowed. Long-term unemployed people are more likely to be older and male and have lower levels of formal education than those who have been unemployed for a shorter period. We use micro-level labour market data to show that future employment prospects are closely tied to the duration of unemployment: people who are unemployed for longer are less likely to find a job. We also find some evidence that an extended period of unemployment can harm people's employment chances for a long time afterwards.

Introduction and motivation

The COVID-19 pandemic has resulted in a substantial increase in labour market underutilisation, with more people wanting a job, or to work more hours, than employers need. While the economic outlook is highly uncertain, it is likely that the unemployment rate will remain elevated for a number of years. As such, some unemployed people are facing the prospect of a prolonged period of unemployment.

There are many social and economic consequences of long-term unemployment. The longer a person is

unemployed, the harder it may be for them to find a job. This could be because they lose skills and networks, there is a stigma associated with being long-term unemployed, or because people become discouraged and leave the labour force. Long periods of unemployment are associated with lower incomes and financial stress. They can also be debilitating for the individuals, families and communities that are affected. For the economy as a whole, long-term unemployment reduces the effective pool of workers and increases the cost of welfare support.

In this article, we provide an overview of the trends in long-term unemployment in Australia over the past 30 years, and the distinguishing characteristics of the long-term unemployed. We then look at how the transition out of unemployment differs for people depending on how long they have been unemployed. While our analysis largely pre-dates the effects on the labour market from the pandemic, our results are a useful starting point for policymakers considering ways to reduce the chances that Australians face a prolonged bout of unemployment.

Trends in long-term unemployment

Long-term unemployment is defined here as being without paid work, and/or have been looking for work, for a year or more. The long-term unemployment rate, which has been relatively stable at around 1¼ per cent over the past 5 years, generally follows the overall unemployment rate with a lag (Graph 1). Following the 1990s recession, the long-term unemployment rate reached around 4 per cent, before steadily moving lower to bottom out at ½ per cent in late 2008 during the mining boom. At this time, the average duration of unemployment reached a low of 7 months.

In the following decade, leading up to the pandemic, the long-term unemployment rate increased, and the average duration of unemployment also rose to be close to one year (Graph 2). Currently around one in every 5 unemployed people have been unemployed for more than a year, an increase from around one in every 8 a

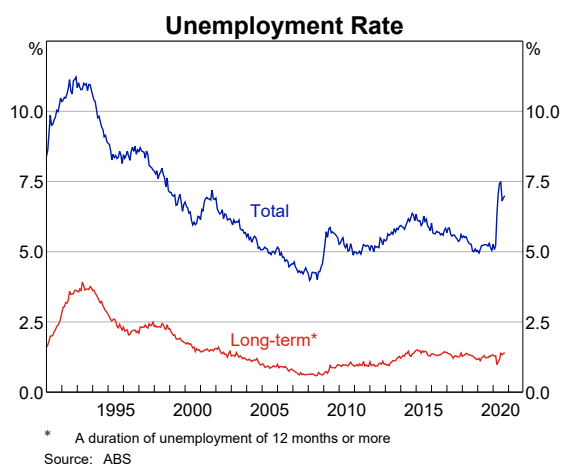
decade ago. The share of very long-term unemployed people increased over this period: around 10 per cent of unemployed people have been unemployed for 2 or more years. The increase in the average duration of unemployment over the 2010s reflects a slowing in the rate at which unemployed people either gain employment or leave the labour force (with flows into unemployment more stable until recently). Average duration has fallen in 2020 because many people lost their jobs when the pandemic first broke out.

Who are the long-term unemployed?

The increase in the average duration of unemployment over the 2010s has been fairly broad based across groups (in terms of sex, age, level of education and migrant status). The average duration of unemployment tends to be higher among men, older people and those without a university degree (Graph 3). However, looking at the average duration of unemployment for different groups cannot by itself tell us who the long-term unemployed are.

We use data from the Household, Income and Labour Dynamics in Australia (HILDA) survey to look at the general characteristics of long-term unemployed people, and compare these characteristics to those of the rest of the labour force. HILDA is a rich data source that contains many household and individual characteristics unavailable elsewhere, including household finances. Compared with the pool of employed or short-term unemployed people, the long-term

Graph 1



Graph 2

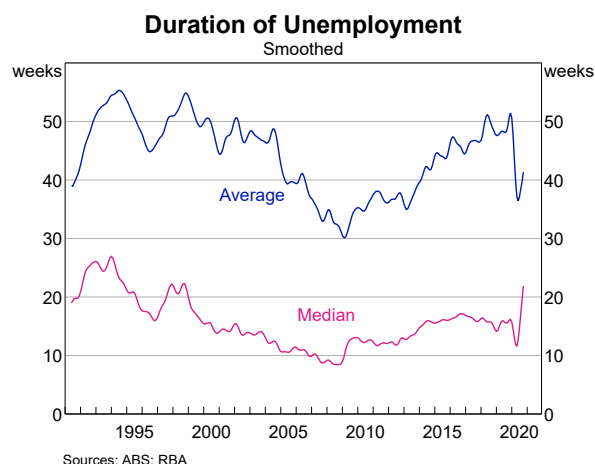


Table 1: Descriptive statistics by labour force status, 2001–18

	Long-term unemployed ^(a)	Short-term unemployed	Employed
Age (mean)	37	31	39
Male (%)	61	51	53
Completed year 12 (%)	57	61	79
University degree (%)	11	15	30
Born in Australia (%)	67	72	74
Non-English-speaking background (%)	23	18	14
Household net wealth (mean, \$'000 in 2018 dollars)	423	492	920
Household annual disposable income (mean, \$'000 in 2018 dollars)	75	88	115
Within the last year due to a shortage of money:			
Went without meals (%)	14	11	3
Was unable to heat home (%)	9	6	2
Asked for financial help from friends or family (%)	29	29	12
Asked for help from welfare/community organisations (%)	15	13	2

(a) The long-term unemployed are those unemployed for one year or more

Source: HILDA Survey Release 18.0

unemployed are more likely to be male, much less likely to have completed year 12 or tertiary education, and have significantly less household net wealth and disposable income (Table 1).^[1] The long-term unemployed are also more likely to report experiencing hardship due to a shortage of money.

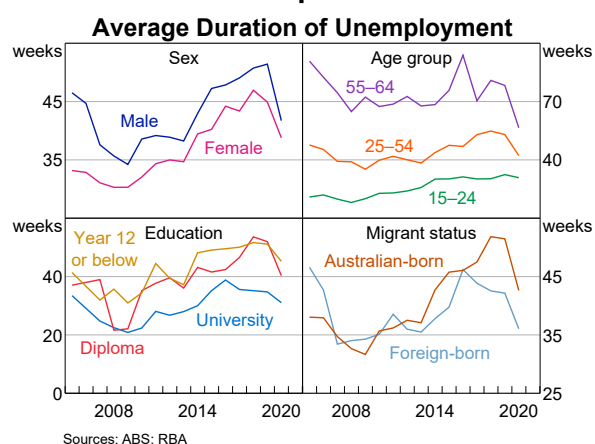
The long-term unemployed are more likely to have previously worked in the agriculture, manufacturing and retail industries relative to short-term

unemployed and employed workers. They are also more likely to have previously held jobs in lower-skill occupations. Long-term unemployment is more common in regional areas than in capital cities.

Flows into and out of long-term unemployment

The Australian labour market is quite dynamic, with many people flowing into and out of employment, unemployment and the labour force each month. While the bulk of people who are either employed or outside the labour force remain in their current 'state' each month, on average over the past 30 years around 23 per cent of unemployed people transition into employment and a further 21 per cent leave the labour market each month. This means that a little more than half of the unemployed pool remain unemployed from month to month.

To examine how the transition rates out of unemployment differ based on how long someone has been unemployed, we make use of person-level longitudinal Labour Force Survey (LLFS) data.^[2]

Graph 3

Long-term unemployed people are, on average, less than half as likely to gain employment within a month as someone in short-term unemployment (Graph 4). The chances that a short-term unemployed worker finds a new job depends on economic conditions, with the job-finding rate declining during economic slowdowns and rising steadily during economic expansions. By contrast, the job-finding rate for the long-term unemployed is less sensitive to these cycles and so they may benefit less from favourable labour market conditions. Overall, the rate at which long-term unemployed workers find employment has fallen over the past decade. Possible explanations could be compositional changes in the pool of unemployed workers, changes in economic conditions, or changes in government policy. For example, any changes to the generosity of government income support for unemployed workers may change how intensely someone searches for work. Since unemployment benefits have been declining as a ratio of average wages for some time, incentives to search for work should have – if anything – increased.

The long-term unemployed are more than twice as likely to leave the labour market as find employment in a given month. This is consistent with longer-term unemployed people becoming discouraged from searching for work. Other potential reasons for exiting the labour force include reaching retirement age, illness, or caring responsibilities. There has also been a notable

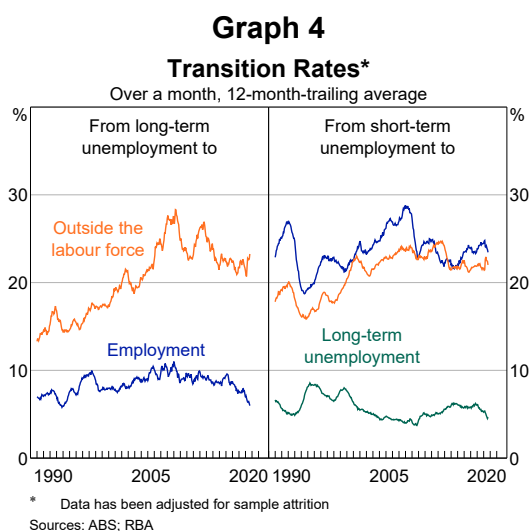
decline in the rate at which long-term unemployed people leave the labour force over the past decade. However, job search requirements to access JobSeeker have generally tightened over the past decade and are unlikely to be responsible for the decline in the rate at which long-term unemployed people leave the labour force.^[3]

After controlling for other characteristics, female long-term unemployed are less likely than males to find a new job but more likely to leave the labour force.^[4] Older long-term unemployed people are also less likely to find a new job. Unsurprisingly, the likelihood of leaving the labour force is higher for older long-term unemployed people.

What affects the duration of unemployment?

Intuitively, any characteristic or feature that affects the *rate* at which people leave unemployment can have a large cumulative effect on the likelihood that they stay unemployed over a given period of time. It may be the case that the overall increase in the average duration of unemployment in the 2010s simply reflects compositional changes in the labour force. To see if this is the case, we can use so-called survival modelling techniques to estimate the rate at which people leave unemployment while taking into account some of their personal characteristics.^[5] We again make use of LLFS microdata for this exercise. We are able to construct a large dataset of individual unemployment spells, spanning the period from the mid 1980s to 2020. While we cannot follow a long-term unemployed person for their entire period of unemployment, the LLFS data provide us with the date they become unemployed and the date they either find a job or leave the labour force, or remain unemployed, in the months surveyed.

The left panel of Graph 5 shows the likelihood someone (after adjusting for their personal characteristics) *remains* unemployed at a given time into their unemployment spell, given that they had been unemployed until then.^[6] The curves in the left panel of Graph 5 flatten quickly, indicating that the chance of someone leaving unemployment tends to be quite low after being unemployed for a year or so. The curve has shifted slightly since the



2000s, suggesting that, even holding the composition of the unemployed pool constant, there is a higher chance someone will remain unemployed in the first year of unemployment in the 2010s compared with the 2000s.

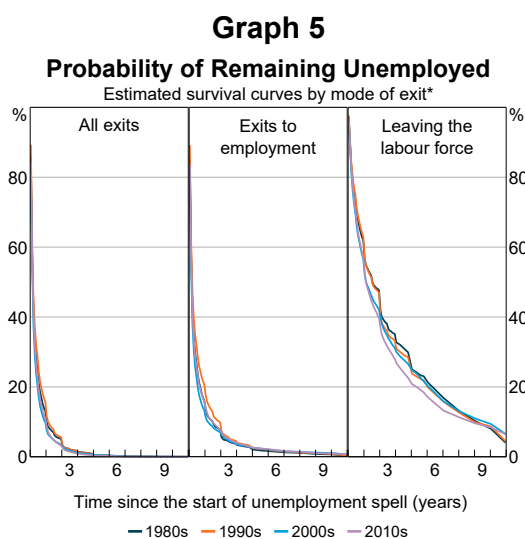
We are also interested in how an unemployment spell ends, as whether someone finds a job or instead leaves the labour market can lead to very different long-term outcomes for them. The middle and right panels of Graph 5 show that relative to the 2000s, the likelihood for the unemployed to find a job has fallen in the 2010s, at least in the first few years of an unemployment spell. At the same time, the very long-term unemployed have become more likely to leave the labour force.^[7]

Even after taking other characteristics into account, ageing – at least until retirement age – is associated with a lower probability of exiting unemployment into a job (see Table A3 for the full estimation results). Interestingly, time away from work – including both time unemployed and time out of the labour force – seems to have an effect over and above the duration of unemployment. In particular, being a former worker, defined by the Australian Bureau of Statistics (ABS) as someone that last worked 2 or more years ago, further decreases the chance of exiting a spell of unemployment by around 65 per cent compared with someone who has worked recently; the result is highly statistically

significant (Graph 6, left panel).^[8] The effects are large and, because they accumulate over the length of an unemployment spell, can have a sizeable effect on the long-term unemployed (Graph 6, right panel). Of course, these are not necessarily *causal* effects from time away from work. It may also be the case that these workers are different in some other way for which we do not account.

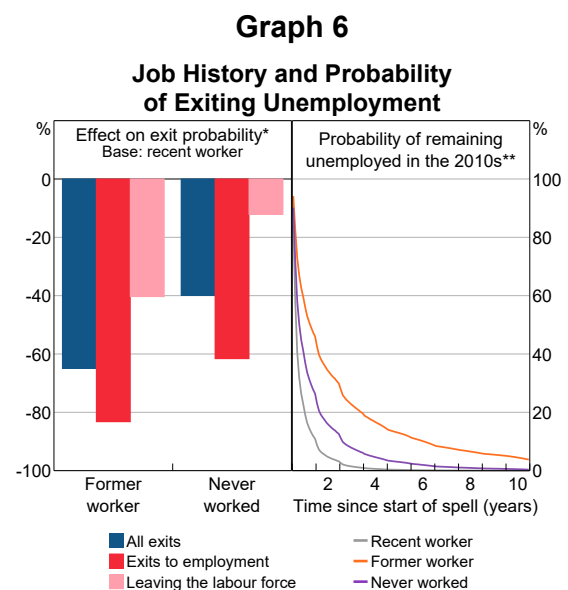
Some consequences of long-term unemployment

We have shown that the probability of exiting unemployment declines the longer someone is unemployed, and that this is driven by a lower probability of finding work. One possible explanation for these differences is that the length of time someone is unemployed *in itself* lowers the likelihood of being employed. This is a specific form of ‘scarring’ from unemployment.^[9] There are several explanations for this phenomenon in the literature, including skill loss during periods away from work, discrimination against the long-term unemployed by employers, or because the unemployed put less effort into searching for a job as they become discouraged.^[10] Scarring may prolong unemployment, lead to lower wages on re-employment, and/or increase the probability of experiencing unemployment again.^[11]



* Calculated from baseline hazard rates estimated separately for each mode of exit, using the same sample and set of controls; the baseline categories are: male, aged 25 to 34, residing in greater Sydney, born in Australia, head of a couple family, is not married, has no children in the household, has searched for only full-time work or both full- and part-time work, is a recent worker

Sources: ABS; authors' calculations



* Estimates of the effect on predicted exit probability from 3 separate regressions with all exits, exits to employment, and exits to outside the labour force as the respective dependent variable; a former worker last worked 2 or more years ago

** Using the same specification and reference categories as the left panel of Graph 5

Sources: ABS; authors' calculations

Another possible explanation for the link between longer periods of unemployment and poor labour market outcomes is inherent differences (e.g. innate ability and skills) between people who are unemployed for short periods and those unemployed for longer periods. For instance, the long-term unemployed report facing different barriers to finding work than the short-term unemployed. The long-term unemployed are much more likely to report a physical disability or ill health as being their main difficulty in finding work. They are also more likely to report that employers consider them too old. Conversely, the short-term unemployed are more likely to report there being too many applicants, or that they lacked relevant skills.

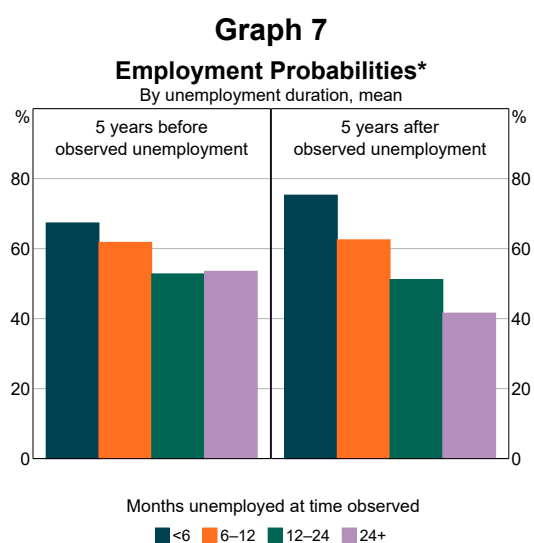
If, after accounting for differences across people, we find evidence of a *causal* relationship between the duration of unemployment and future job and wage prospects, then policies aimed at reducing unemployment duration may lower the overall loss to society from unemployment.

Is there any evidence of scarring from the duration of unemployment?

We find some tentative evidence that the duration of unemployment leads to scarring. To do this, we look at the difference in employment rates for individuals before and after unemployment spells of varying duration.^[12] Underlying this approach is the idea that any inherent differences in job-finding rates between people who become short- and long-term unemployed should be evident both before and after an unemployment spell. If the likelihood of finding a job after an unemployment spell falls relative to before, then there is evidence of scarring from experiencing a period of unemployment. If groups who are unemployed for longer experience the largest falls in employment probabilities, then this would suggest the detrimental effects of unemployment increase as unemployment duration increases. That is, there should be larger differences in the likelihood of being employed between the long- and short-term unemployed after their unemployment spells, relative to before.

Even after accounting for education, experience and economic conditions, we see systematic differences in employment rates in the years *before* an unemployment spell for those that are long-term unemployed compared with the short-term unemployed (left panel of Graph 7).^[13] This is due to inherent differences across these groups. Those who go on to be long-term unemployed are less likely to have been employed 5 years before the spell than those who become short-term unemployed.

For those who experienced longer unemployment spells, there is a clear decrease in employment probabilities 5 years after they are observed to be unemployed. For those unemployed for shorter durations, however, there is no obvious decline in employment probabilities over the same timeframe. This difference between the long- and short-term unemployed is suggestive of a causal relationship between the duration of unemployment and future labour market outcomes, and provides evidence of scarring that increases with employment duration. This is consistent with Abraham *et al* (2016), who find a causal relationship between the duration of unemployment and future unemployment for US workers, but in contrast to Doiron and Gorgens (2008), who find no such relationship for young, low-skilled Australian workers from unemployment duration alone (while finding evidence for an effect from the *number* of unemployment spells).



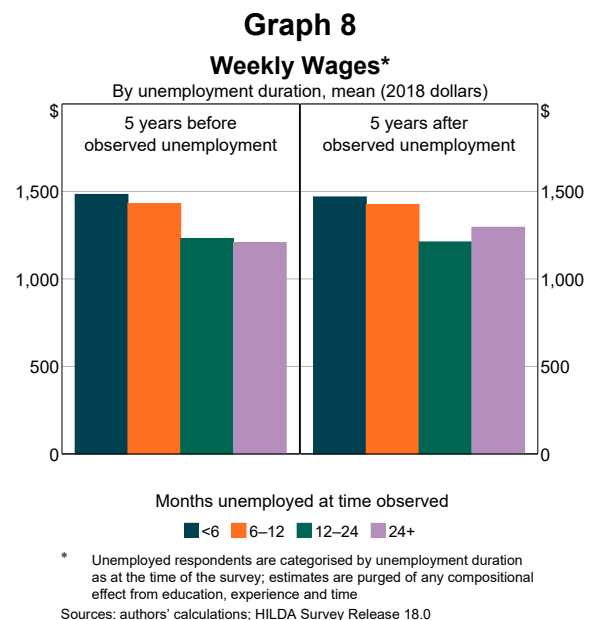
* Unemployed respondents are categorised by unemployment duration as at the time of the survey; estimates are purged of any compositional effect from education, experience and time

Sources: authors' calculations; HILDA Survey Release 18.0

We used the same methodology to see if the duration of unemployment affects someone's eventual labour income (Graph 8). To remove the effect of being unemployed on earnings, we limit our focus to only those people who regain employment. It is clear that the long-term unemployed fare significantly worse than the short-term unemployed after regaining work, even after accounting for age and experience – this is shown by the gap in wages between the long- and short-term unemployed in the right panel of Graph 8. However, the fact that similar differences in wages between the long- and short-term unemployed are also present before observed unemployment means there is no clear evidence of scarring from the duration of unemployment on wages, at least among workers who re-enter employment. Our findings therefore suggest that any persistent income losses from long-term unemployment may arise mainly from a lower probability of finding a job, rather than lower wages upon re-employment. This finding is somewhat different from the international literature that does find a negative effect of unemployment duration on wages; these international studies, however, tend to use large administrative datasets that are not yet widely available for researchers here.^[14] Administrative data would allow us to follow individual workers – including details on their employment history and earnings – over a longer period of time. This would give us a clearer picture of the consequences of long-term unemployment in Australia, and provide a more appropriate comparison with the international literature.

Conclusion

The probability of gaining employment is lower for people who have had longer unemployment spells. We find some evidence of scarring from unemployment, with long-term unemployed people experiencing worse employment outcomes relative to those who were unemployed for a shorter period. In Australia and abroad, the adverse effects on individuals, society and the economy as a whole from prolonged spells of unemployment will be important considerations in the setting of public policy following the COVID-19 shock. ✎



Appendix A

Table A1: Additional descriptive statistics by labour force status, 2001–18

	Long-term unemployed ^(a)	Short-term unemployed	Employed
Married (%)	38	34	64
Has resident children (%)	31	27	44
Aboriginal and/or Torres Strait Islander (%)	7	6	1
Self-assessed poor health (%)	1	2	1
Inner regional (%)	19	18	17
Outer regional/remote (%)	12	9	10
Years of work experience (mean)	15	12	20
Reservation wage (mean, \$)	20.9	21.8	-
Preferred hours at reservation wage (mean)	32.3	29.4	-
Tenure with last employer (mean, years)	2.9	1.8	-
SEIFA decile of relative socio-economic advantage (median)	3	5	6
Occupational status (last job if not employed) (mean)	32	36	50
Owens home (%)	45	50	67
Sold home because of financial difficulties (if owns property and has sold property within the last 4 years) (%)	35	21	7
Hours searching for a job in last week (if unemployed, mean)	6.7	6.5	-

(a) The long-term unemployed are those unemployed for one year or more

Source: HILDA Survey Release 18.0

Table A2: Selected Estimates from Multinomial Probit Models, April 1986 to August 2020Average marginal effects^(a)

	Remain unemployed	Exits to employment	Leaving the labour force
Sex (base category: male)			
Female	−0.065***	−0.002	0.066***
Age (base category: 25–34)			
15–19	−0.007	0.015***	−0.008**
20–24	0.012***	0.008***	−0.020***
35–44	0.001	−0.007***	0.006**
45–54	−0.004	−0.020***	0.024***
55–59	−0.018***	−0.036***	0.054***
60–64	−0.083***	−0.053***	0.136***
Country of birth (base category: Australia)			
Migrant from main English-speaking country ^(b)	0.011***	0.000	−0.011***
Migrant from elsewhere	−0.007**	−0.011***	0.018***
Social marital status (base category: not married)			
Married	−0.014***	0.009***	0.006**
Number of children in household (base category: 0)			
1	−0.021***	0.002	0.019***
2	−0.030***	0.004*	0.026***
3 or more	−0.012**	−0.006**	0.028***
Job search (base category: looked only for full-time work, or for both full- and part-time work)			
Looked only for part-time work	−0.187***	0.021***	0.166***
Employment history (base category: recent worker, i.e. last worked less than 2 years ago)			
Former worker	0.005*	−0.039***	0.034***
Never worked	−0.037***	−0.027***	0.064***
State and area dummies	Yes	Yes	Yes
Number of observations	184 516	184 516	184 516
Number of transitions	137 119	14 754	32 643

(a) ***, ** and * denote statistical significance at the 1, 5 and 10 per cent levels; standard errors are clustered at the respondent level

(b) Main English-speaking countries comprise the United Kingdom, Republic of Ireland, New Zealand, Canada, United States of America and South Africa

Sources: ABS; authors' calculations

Table A3: Selected Estimates from Survival Models, September 1985 to September 2020Hazard ratios from separate regression for the dependent variable in each column^(a)

	All exits	Exits to employment	Leaving the labour force
Sex (base category: male)			
Female	1.13***	1.04***	1.25***
Age (base category: 25–34)			
15–19	1.07***	0.91***	1.32***
20–24	0.95***	0.93***	0.99
35–44	0.96***	0.99	0.94***
45–54	0.86***	0.84***	0.90***
55–59	0.75***	0.64***	0.89***
60–64	0.71***	0.48***	0.96**
65 and above	0.89***	0.70***	1.06**
Country of birth (base category: Australia)			
Migrant from main English-speaking country ^(b)	1.04***	1.06***	1.01
Migrant from elsewhere	0.89***	0.74***	1.06***
Relationship in household (base category: head of couple family)			
Head of lone-parent family	0.84***	0.57***	1.21***
Children aged 15 and over	0.94***	0.84***	1.09**
Living alone	0.71***	0.61***	0.85***
Social marital status (base category: not married)			
Married	0.98	0.87***	1.16***
Number of children in household (base category: 0)			
1	0.99**	0.93***	1.06***
2	1.03***	0.95***	1.12***
3 or more	0.99*	0.83***	1.16***
Job search (base category: looked only for full-time work, or for both full- and part-time work)			
Looked only for part-time work	1.62***	1.08***	2.31***
Employment history (base category: recent worker, i.e. last worked less than 2 years ago)			
Former worker	0.35***	0.17***	0.60***
Never worked	0.60***	0.38***	0.88***
Area of state effects? (e.g. Greater Sydney)	Yes	Yes	Yes
Number of unemployment spells	424 034	424 034	424 034
Number of exits	266 896	132 690	134 206
Number of respondents	368 760	368 760	368 760

(a) Results presented are exponentiated coefficients. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent levels; standard errors are clustered at the respondent level; to estimate the baseline hazards, monthly intervals were used for the first 3 years of an employment spell, then every quarter until 5 years after the start of a spell, and yearly thereafter until 10 years after the start of a spell; baseline hazards are allowed to vary every decade

(b) Main English-speaking countries comprise the United Kingdom, Republic of Ireland, New Zealand, Canada, United States of America and South Africa

Sources: ABS; authors' calculations

Footnotes

- [*] The authors are from the Economic Analysis and Economic Research Departments. This document uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The unit record data from the HILDA Survey was obtained from the Australian Data Archive, which is hosted by The Australian National University. The HILDA Survey was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views based on the data, however, are those of the authors and should not be attributed to the Australian Government, DSS, the Melbourne Institute, the Australian Data Archive or The Australian National University and none of those entities bear any responsibility for the analysis or interpretation of the unit record data from the HILDA Survey provided by the authors.
- [1] See Appendix Table A1 for additional summary statistics. Using a probit model we find age, sex and education to be statistically significant in predicting long-term unemployment among the unemployed. The older an individual, the higher the odds of them being unemployed for longer durations. Conversely, having more education is associated with lower odds of becoming long-term unemployed.
- [2] The Labour Force Survey follows people over time (every month for up to 8 months). The LLFS data – the longitudinal data from this survey – available to the RBA contain over 27 million responses to the monthly labour force survey from 1982 onwards, and include respondents' employment outcomes in the surveyed months as well as some data on worker characteristics.
- [3] The main payment for those over 21 years of age but under pension age is the JobSeeker Payment (formerly known as the Newstart Allowance). During the COVID-19 pandemic, the government temporarily increased unemployment payments and waived some eligibility criteria, as well as job search requirements, for the JobSeeker Payment.
- [4] We do this using a multinomial probit model. See Appendix Table A2 for model estimates.
- [5] Survival models are typically used to analyse the expected time until some event happens, such as when an unemployment spell ends. Examples from the literature in Australia include Carroll (2006) and Borland and Johnston (2010), who employ survival modelling with HILDA data, while Rotaru (2014) analyses 3 years of the LFS microdata. These papers tend to focus on the individual factors associated with exits from unemployment and not on the estimated baseline rates of exits after accounting for those individual factors. We use a piecewise exponential model to look at how the rate of exit has changed over time. The ability to choose arbitrarily short duration intervals makes this approach very flexible and well suited for estimating the baseline hazard and associated survival curves.
- [6] We hold certain characteristics constant over the entire sample period, such as the respondent's age group, sex, area of state, country of birth, household relationship, marital status, number of children, whether they searched exclusively for part-time work, and whether they are a former/recent worker or had never worked before. Other important variables, such as education and last industry of employment, are not included as they are not consistently available in the data.
- [7] The exit rates to employment and to outside the labour force do not sum to total exits because the 2 types of exits have been modelled separately. The models also do not account for changes to government policy, which (for instance) may affect workers' incentives to keep searching for a job or leave the labour force.
- [8] This is consistent with Kroft *et al* (2019), who, using Canadian data, find that time away from work matters as much as unemployment duration for the job-finding rate.
- [9] This phenomenon is a component of the broader concept of scarring, which typically includes the longer-term adverse consequences of a downturn on labour market outcomes. In this article we consider scarring only as it relates to the length of an unemployment spell. While not discussed in this article, previous literature on the broader concept of scarring has found that workers graduating in a recession experience persistently lower earnings than otherwise both internationally (Oreopoulos, von Wachter and Heisz 2012) and in Australia (Fontenay *et al* 2020; Andrews *et al* 2020).
- [10] For a review of the Australian and international literature see Borland (2020).
- [11] Our focus in this article has been on some of the economic outcomes from long-term unemployment. There are of course serious effects on physical and mental health from a lengthy unemployment spell; see, for example, Sullivan and von Wachter (2009).
- [12] We use the employment share of the population, instead of the labour force, to account for the possibility that scarring may occur through an increase in exits out of the labour force.
- [13] We remove the compositional effects from these variables by estimating an equation where employment is a function of education, work experience, and calendar-year indicator variables. Our estimates in Graph 7 can be interpreted as observed employment probabilities, purged of differences in education, experience and macroeconomic conditions.

[14] For instance, Schmieder, von Wachter and Bender (2016) use administrative German data to find that each additional month of non-employment causes average daily wage decline by less than 1 per cent but this effect fades over a few years; Cooper (2014) finds, using US survey data, that the negative effects on earnings persist for many years. Again using US data, Abraham *et al* (2016)

also find an effect on wages, albeit a much smaller one than that on unemployment. By contrast, Arulampalam (2001) finds no evidence in UK survey data that unemployment *duration* is associated with lower wage outcomes (but the number of unemployment spells does have a negative effect).

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The Response by Central Banks in Advanced Economies to COVID-19

Christian Vallence and Peter Wallis^[*]



Photo: macida – Getty Images

Abstract

Central banks in advanced economies have employed a wide range of tools to support their economies and financial systems during the COVID-19 pandemic. Some measures have involved scaling up standard central bank tools or reactivating facilities introduced during the global financial crisis. Other measures are new innovations. The speed at which these tools were deployed and scale of their usage has been unprecedented. These measures have helped to restore functioning of financial markets, lower interest rates, and support the flow of credit to borrowers.

The COVID-19 crisis

The economic shock resulting from the COVID-19 pandemic was in many ways unprecedented. In the early phase of the pandemic, the size of the shock to the real economy was expected to be large, but exactly how things would evolve was extremely uncertain. This contributed to financial markets becoming severely dislocated. There was a sharp rise in volatility, asset prices declined, and demand for cash rose. Funding for many borrowers became expensive and difficult to obtain.

The size and breadth of the contraction in economic activity, particularly in the second quarter

of 2020, proved to be extraordinary. Labour markets were severely disrupted. International trade in goods and services fell significantly. The downturn was both sharper and more widespread than during the global financial crisis (GFC).

Central banks in advanced economies have responded quickly and forcefully to these financial and economic disruptions (Table 1).^[1] When financial conditions began to tighten in March, central banks rapidly injected liquidity through market operations, purchased government bonds to support market functioning, revived emergency facilities launched during the GFC, and launched

Table 1: Policy Responses by Advanced Economy Central Banks to COVID-19^(a)

March 2020 to November 2020

Central Bank ^(b)	Policy rate	Expanded liquidity operations	USD FX Swap line	Large scale public sector asset purchases ^(c)	Private sector asset purchases ^(d)	Term funding scheme
Fed	1.625% → 0.125%	✓	✓	✓	✓*	✓*
ECB	−0.5%	✓	✓	✓	✓	✓
BoJ	−0.1%	✓	✓	✓	✓	✓
BoE	0.75% → 0.10%	✓	✓	✓	✓	✓
BoC	1.75% → 0.25%	✓	✓	✓*	✓*	
Riksbank	0%	✓	✓	✓	✓*	✓*
Norges	1.50% → 0.25%	✓	✓			
SNB	−0.75%		✓			✓*
RBNZ	1.00% → 0.25%	✓	✓	✓*		✓*
RBA	0.75% → 0.10%	✓	✓	✓*		✓*

(a) Asterisks indicate measures that had not been implemented by the central bank prior to March 2020 for reasons other than for routine operational or liquidity purposes; for private sector assets, asterisks indicates a central bank purchased certain private sector assets for the first time

(b) US Federal Reserve, European Central Bank, Bank of Japan, Bank of England, Bank of Canada, Swedish Riksbank, Norges Bank (Norway), Swiss National Bank, Reserve Bank of New Zealand and Reserve Bank of Australia

(c) Includes open-ended purchases, purchases to achieve a quantity target and purchases to support a yield target

(d) Includes primary and secondary market purchases

new facilities. This has been accompanied by measures to support economic activity, including lower policy rates, the introduction of new or expanded asset purchase programs, and schemes to lower longer-term interest rates and to support the flow of credit to businesses and households.

The objectives of central banks' responses

The policy responses by central banks to the pandemic – though unprecedented in scale and speed of deployment – have reflected the traditional policy mandates of central banks: to meet their employment and inflation objectives by easing financial conditions to support their economies as they experienced a significant demand shock. The responses have also been consistent with the long-standing role of central banks to provide emergency assistance to financial institutions and ensure the liquidity of capital markets during periods of stress.

The policy responses have been implemented in 2 overlapping phases. First, tools focused on restoring market functioning to reverse a tightening in financial conditions and support the transmission

of monetary policy. The second phase has aimed to cushion economies as they experience a severe demand shock by lowering interest rates and supporting the flow of credit to borrowers.

Many tools serve multiple purposes and have been utilised during both phases (Table 2). For instance, public sector asset purchases helped to restore market functioning during the early stages of the pandemic and lower long-term risk-free interest rates over the longer term. Many tools have also been mutually reinforcing. For example, measures to lower interest rates have been reinforced by tools to improve the supply of credit to households and businesses, such as term funding schemes. This has helped to support the transmission of low interest rates throughout the economy.

Alleviating market dysfunction

During March 2020, many financial markets became severely dislocated, which led to a significant tightening in financing conditions across economies.^[2] These stresses reflected a sharp increase in the demand for liquidity (i.e. cash) and

Table 2: Advanced Economy Central Bank Tools and their Primary Purpose(s)

Tool	Primary Purpose(s)		
	Supporting market functioning	Lowering interest rates	Supporting the flow of credit
Liquidity and lending operations			
Increasing the supply of funding	✓	✓	✓
Lengthening terms of liquidity operations	✓	✓	✓
Expanding eligible collateral	✓		✓
Expanding eligible counterparties	✓		✓
USD FX swap lines	✓		
Term funding schemes		✓	✓
Interest rate tools			
Lowering the policy rate		✓	
Lowering interest rates on lending facilities		✓	
Forward guidance		✓	
Asset purchases			
Public sector securities	✓	✓	
Private sector securities	✓	✓	✓

constraints on the ability of dealers to intermediate markets.^[3]

The demand for liquidity reflected precautionary hoarding of cash and cash-like instruments by banks, other financial entities, non-financial businesses and households in anticipation of disruptions to funding markets and reductions in income. At the same time, financial market participants sought cash to reduce leverage and to meet contractual obligations such as redemptions by investors and margin calls arising from extreme asset price volatility. More generally, investors in a wide range of financial markets sought to reduce their exposure to riskier positions in favour of highly liquid and low-risk instruments, reducing the availability of funding in the market.

Meanwhile, financial intermediaries such as banks and broker/dealers struggled to intermediate the significant volume of flows from clients, reflecting balance sheet constraints and a reluctance to assume significant positions at a time of increased financial market and default risk. All the while, lockdowns and working-from-home arrangements raised operational risks.

The overall result was a severe tightening in financial market conditions, characterised by a sharp rise in the cost of transacting in markets (and in some cases, the inability to transact at all), a significant rise in the cost of funding, and the beginning of self-perpetuating asset ‘fire sales’ (Graph 1).^[4] The dysfunction also caused a breakdown in price discovery, which hindered the ability of government bond markets to serve as benchmarks in the pricing of other financial assets and instruments.

Liquidity and lending operations

To meet this extraordinary demand for liquidity, central banks quickly expanded their lending operations. In the first days of the crisis this was done by scaling up short-term open market repurchase operations and lengthening the term at which institutions could borrow through these operations. For example, the US Federal Reserve began conducting weekly 3-month repurchase operations (Graph 2). Some central banks offered even longer terms on regular repurchase

operations, including up to 6 months in Sweden and up to 24 months in Canada.

Many central banks also re-established GFC-era lending facilities and launched new ones. These facilities provided funding to financial institutions against a wider range of collateral than accepted through standard open market operations, including mortgages, commercial paper, corporate bonds, debt issued by state and local governments, and loans to businesses and households. The price of many of these facilities was also reduced, and in some instances the facilities were made available to a wider range of counterparties.

The overall effect of these operations was to significantly expand the volume of liquidity available to the banking system. This allowed banks to exchange a wide range of less liquid assets for

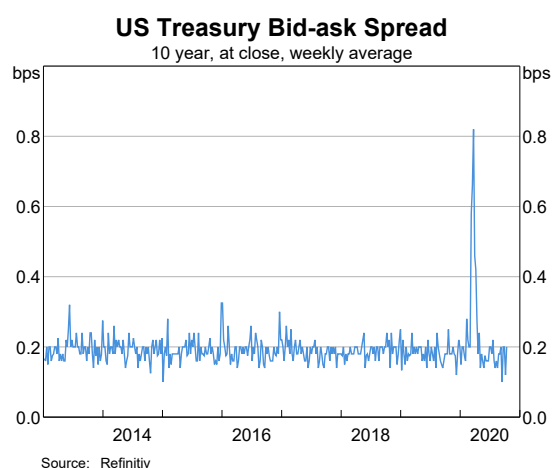
cash at a time when cash was in high demand. It also provided a source of stable and low-cost funding for banks at a time when alternative sources were scarce or prohibitively expensive. This extra liquidity also underpinned lower interest rates in other short-term money markets, which was transmitted to other financial products in the economy (Graph 3). Nevertheless, the extent to which extra liquidity was able to alleviate dysfunction in markets was constrained by the inability or unwillingness of financial intermediaries to fully absorb asset sales by other market participants. Central banks therefore turned to asset purchases to directly meet the demand for liquidity that could not be channelled through the banking system.

Asset purchases

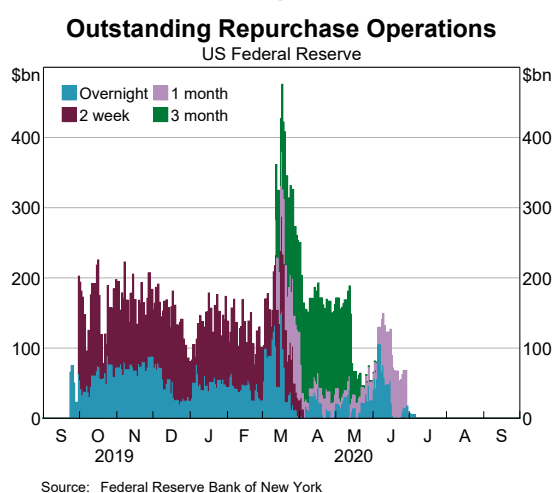
Central banks undertook asset purchases to promote market liquidity and market functioning in a way that bypassed financial intermediaries. These asset purchase programs were very large, and in many cases were uncapped. Reflecting the scale of the dysfunction, the pace of purchases far exceeded what was undertaken during the GFC (Graph 4). In the month of April alone, purchases by the 4 largest central banks totalled nearly US\$1.5 trillion, 6 times the amount purchased at the height of the GFC.

Some central banks also conducted purchases of private sector securities to alleviate strains in those markets. Some purchased securities issued by state

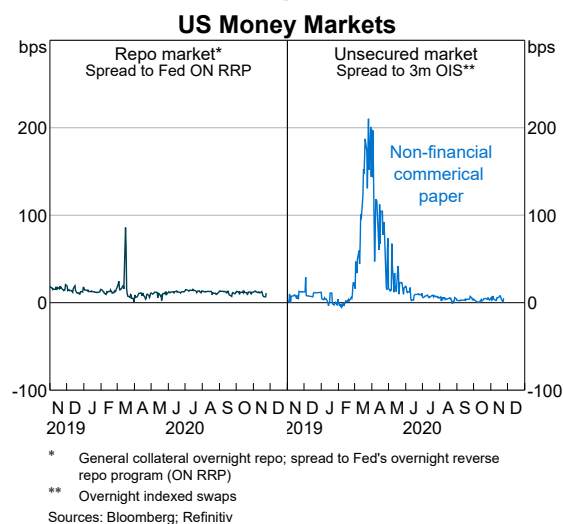
Graph 1



Graph 2



Graph 3



and local governments (sub-national issuers) for the same reason. Purchases of private sector securities included corporate bonds, financial and non-financial commercial paper, exchange-traded funds, and commercial and residential mortgage-backed securities. In some cases corporate bonds that had been downgraded to below investment grade (so called ‘fallen angels’) were purchased or accepted as collateral for the first time.

Most private sector and sub-national securities were purchased in the secondary market to support market functioning and the flow of credit to businesses (see below). Some purchases were conducted in the primary market, with the goal of providing a guaranteed source of funding for market participants.^[5] These primary market purchase programs were often structured as a ‘backstop’ arrangement, which involved making these facilities relatively expensive to use except when market conditions were very strained. This encouraged issuers to use market funding where possible, but still gave investors confidence that issuers could ‘roll’ maturing debt with central banks in the event that they were unable to find an alternative buyer.

Measures to support foreign exchange markets

The deterioration in conditions in global markets in March extended to foreign exchange (FX) markets.^[6] In FX spot markets there was a widening in spreads between bid and ask prices and a decline in market depth, although the dislocations were

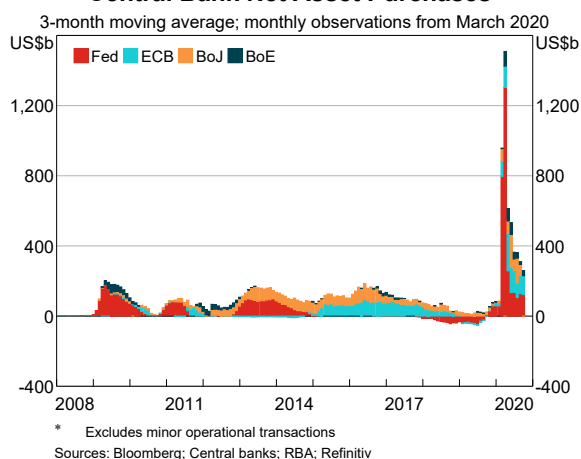
less severe and shorter in duration than during the GFC.

Stressed conditions were more evident in the market for foreign exchange swaps. These markets are an important source of US dollar funding for many non-US financial institutions.^[7] Strains in these markets were evident in the sharp increase in the cost of borrowing US dollars in exchange for other currencies (such as euros or yen), which was even larger than the rise in the cost of borrowing US dollars in US onshore markets.^[8] The difference between these rates (in the FX swap market and US onshore market) is known as the ‘cross-currency basis’ (Graph 5).

In response to these developments, the US Federal Reserve and 14 other central banks took coordinated action to enhance the provision of US dollar liquidity through US dollar swap lines.^[9] The facility provides US dollars (in exchange for local currency) to central banks outside the United States, which can then lend these US dollars to domestic institutions on a collateralised basis at lower costs and for longer terms than available in the market. The amount of US dollars borrowed through these facilities reached a peak of around US\$450 billion, with particularly strong take-up by institutions in Europe and Japan (Graph 6). The total value of US dollars extended to non-US based entities through swap lines over this period was below that observed during the GFC (of almost US\$600 billion). The cost of borrowing US dollars in swap markets

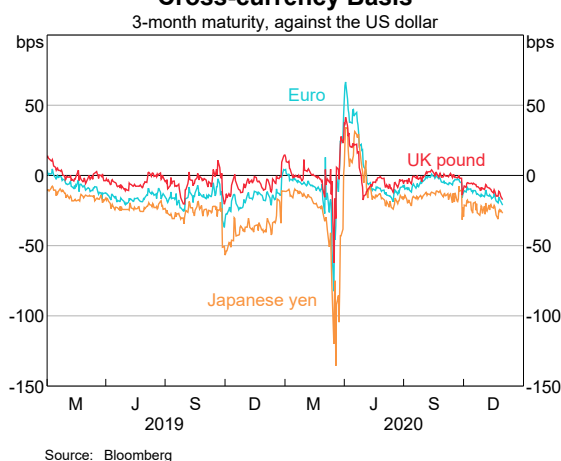
Graph 4

Central Bank Net Asset Purchases*



Graph 5

Cross-currency Basis



quickly declined following the introduction of these policy measures.

Supporting economic activity

As the pandemic unfolded, there was a severe collapse in economic activity and hours worked. A decline in incomes also threatened to result in a rise in defaults by businesses and households, which could have had implications for financial stability. Consistent with their mandates, central banks have responded to these developments by implementing policy measures to provide significant long-term support to their economies.

Interest rate tools

Most central banks quickly lowered short-term policy rates to around zero to reduce interest rates on a broad range of financial products and instruments.^[10] This provided immediate cash flow stimulus to households and businesses that were net borrowers by decreasing the cost of interest repayments.^[11] Lower interest rates also supported economic activity by increasing incentives to consume and invest, reducing incentives to save, and by increasing asset prices. All else being equal, lower interest rates also contributed to a lower exchange rate than would otherwise be the case.^[12]

In many cases, the reductions in policy rates resulted in lower interest rates on lending facilities offered by central banks (see above). This was an important channel through which lower policy

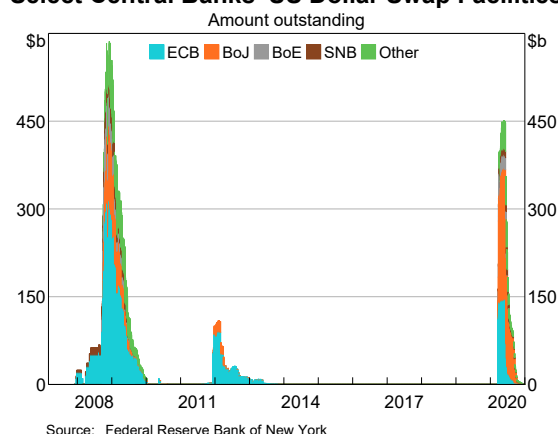
rates translated into lower interest rates in the economy, particularly during the peak of the crisis when central banks were providing significant amounts of funding to the financial system through these facilities.

Policy rates, however, were already much lower than they had been at the start of previous recessions, in part due to a long-term decline in 'neutral' interest rates.^[13] As a result, the policy rate of most central banks was already close to its 'effective lower bound', and so was not lowered by as much as in previous recessions (Graph 7).^[14] Addressing this constraint on their ability to fully respond to the economic fallout of the pandemic was a key reason why central banks employed the wide range of tools discussed in this article to support their economies.

Central banks have also introduced or strengthened forward guidance with respect to the future path of short-term policy rates. Most central banks have indicated that policy rates will not rise until the economic recovery is sufficiently well progressed ('state-based' guidance). In some cases, central banks used economic projections to support this guidance – for instance, by indicating that the conditions required to raise policy rates are not expected to occur within a certain number of years. In line with such guidance, risk-free yields have declined to very low levels out to a horizon of several years or more (Graph 8).

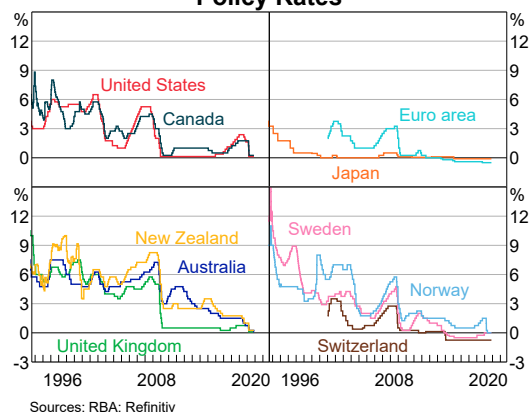
Graph 6

Select Central Banks' US Dollar Swap Facilities



Graph 7

Policy Rates



Asset purchases

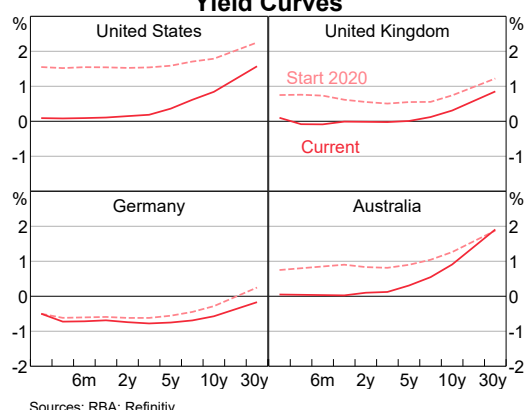
Many central banks have implemented new, or expanded existing, government bond purchase programs to help lower long-term risk-free interest rates – a tool usually referred to as quantitative easing (QE) (Graph 9).^[15] These programs have helped to lower long-term government bond yields to close to historical lows across advanced economies (Graph 10). Asset purchases reduce the market supply of the targeted asset class(es), reducing the yield on these securities and their substitutes as investors reinvest proceeds into non-targeted assets (the ‘portfolio balance channel’).^[16] To the extent that some investors reinvest into foreign assets, this rebalancing contributes to a lower exchange rate than would otherwise be the case. Lower long-term interest rates also contribute to a lower exchange rate.

Some central banks have weighted purchases towards particular maturities and market segments to influence the spreads between different interest rates. For example, the European Central Bank initially weighted its pandemic-related government bond purchases more heavily towards Italian and Spanish government bonds relative to its long-term targets because those markets came under particular stress in the initial months of the pandemic. These purchases have helped to lower the yield on these bonds relative to other euro area government bond yields.

Several central banks have also purchased private sector assets, either by reviving GFC-era programs or implementing new ones. Some central banks have also purchased securities issued by state and municipal governments and public entities, or established funding backstops for these issuers. As well as supporting market functioning (see above), these programs aim to lower interest rates for targeted borrowers and support the flow of credit by lowering liquidity and credit risk premia. In addition, the presence of the central bank in secondary markets supports demand for newly issued debt securities (the primary market), facilitating the flow of credit to borrowers.

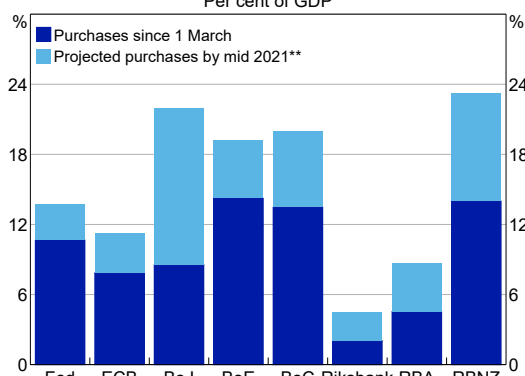
In many instances, the announcement of the facilities was enough to improve financing conditions materially for borrowers (Graph 11). For instance, in the United States corporate bond spreads fell significantly after the Federal Reserve announced (and again later when it expanded) its corporate bond purchase programs, even though

Graph 8
Yield Curves



Graph 9

Central Bank Purchases of Government Debt*
Per cent of GDP

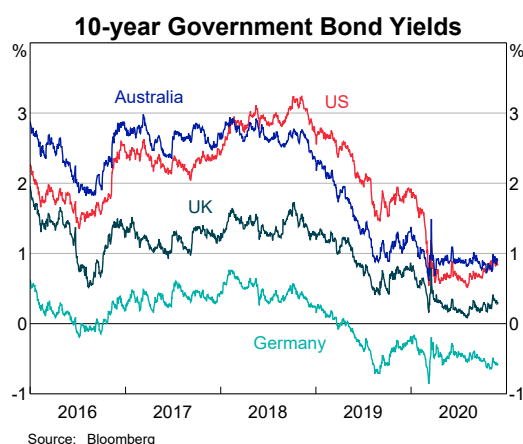


* The Swiss National Bank and Norges Bank have not purchased government debt in response to COVID-19

** Projections are based on purchase targets and recent rate of purchases

Sources: Central banks; RBA; Refinitiv

Graph 10



actual purchases did not take place until more than 2 months after the announcements and usage remains low (Graph 12).

The scope of central bank support provided to the non-bank private sector has been unprecedented, and represents a profound change in the extent of central bank support for private capital markets. Purchases of private sector securities effectively mean that central banks are lending directly to non-financial corporations for long terms on an unsecured basis. These facilities have increased the role that central banks play in the allocation of credit in their economies, and also introduced some

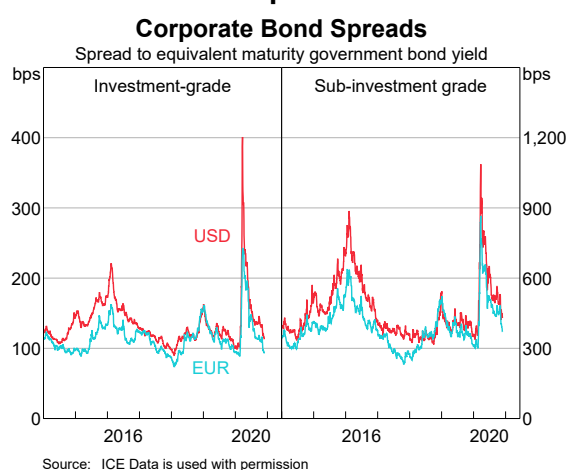
degree of moral hazard. Central banks have taken measures to address these issues, such as by ensuring that purchases replicate a broad market index, and by using backstop arrangements where possible. Central banks have also assumed greater risk of loss due to defaults than on other lending operations, which are usually secured with collateral in the form of securities issued by governments. To reduce the risk of such programs to central bank balance sheets, many have been partly or wholly indemnified against losses on these programs by national governments.

Term funding schemes

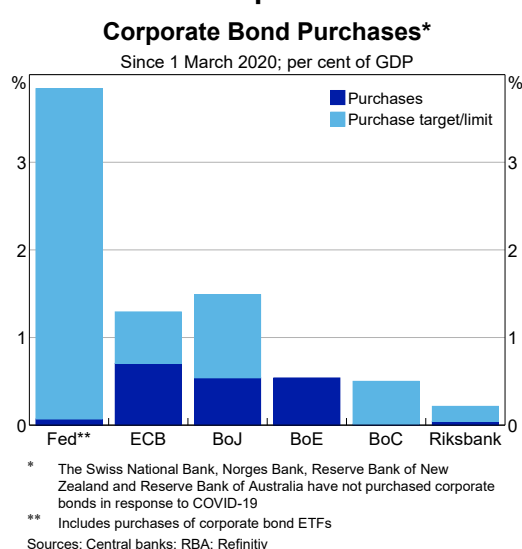
Many central banks have supported bank lending by expanding or launching new term funding schemes (Graph 13).^[17] These schemes aim to lower longer-term funding costs for banks and in turn reduce interest rates for borrowers. This was particularly important during the pandemic, because bank lending rates tend to be less responsive to a decline in policy rates when interest rates are already very low.^[18]

Term funding schemes involve central banks providing low-cost, long-term funding to banks or other financial intermediaries, secured against collateral to mitigate financial risks to the central bank. In contrast to regular liquidity operations, these schemes involve lending for several years. Many schemes implemented in response to COVID-19 also feature incentives such as lower interest rates or additional funding allowances that encourage banks to increase the supply of credit in the economy. Oftentimes, these incentives are designed to encourage the supply of credit to borrowers that are likely to have greater difficulty accessing credit or face particularly difficult economic conditions during the pandemic, such as small and medium-sized enterprises (SMEs).^[19] A small number of schemes have been designed to complement fiscal programs by accepting loans guaranteed by the fiscal authorities as collateral, or by linking funding allowances to lending related to a specified government program.

Graph 11

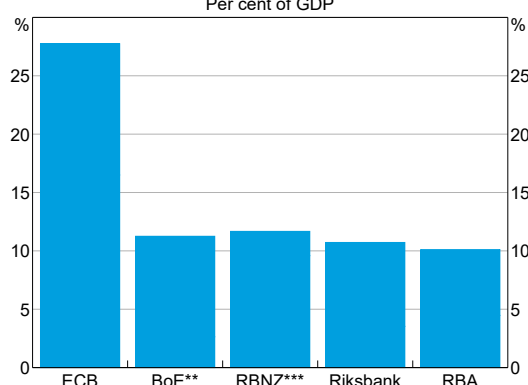


Graph 12



Graph 13**Size of Selected Term Funding Schemes***

Per cent of GDP



* Maximum size assuming full take-up

** Initial allowance only

*** Includes Term Lending Facility and Funding for Lending Programme

Sources: Central banks; RBA

Conclusion

The COVID-19 crisis is ongoing. As such, many of the measures implemented by central banks to support the economic recovery will remain in place for a considerable period. On the other hand, financial market functioning has largely normalised,

and so usage of many of the facilities that were implemented to support markets has declined, and some central banks have begun the process of scaling back certain programs. Nevertheless, central banks stand ready to quickly restart these programs if needed.

The pandemic has reinforced the importance of a rapid, forceful and targeted response by policy-makers to an emerging financial or economic crisis. Moreover, the response should ensure that credit channels remain open, as well as ensuring that the cost of credit declines. The measures implemented by central banks in response to COVID-19 helped to quickly resolve acute financial market stress at a time when access to these markets by businesses and governments was essential. This has allowed accommodative monetary policy to transmit throughout economies, which has provided immediate support to households and businesses facing a decline in incomes and helped to reduce potential long-term harm to economies and financial systems. ✎

Footnotes

- [*] The authors are from International Department and would like to thank Tim Atkin, Benjamin Beckers, Matt Boge, Guy Debelle, Sean Dowling, Alex Heath, Jarkko Jaaskela, David Jacobs, Christopher Kent, Ewan Rankin, Ashvini Ravimohan, Carl Schwartz and Max Sutton for their thoughtful advice and suggestions.
- [1] This article discusses the response in 2020 by the US Federal Reserve, European Central Bank, Bank of Japan, Bank of England, Bank of Canada, Reserve Bank of New Zealand, Swedish Riksbank, Norges Bank (Norway) and the Swiss National Bank to the COVID-19 crisis. See Debelle (2020) and Kent (2020) for further discussion of the response by the Reserve Bank of Australia, and RBA (2020a) for details of the response by emerging economy central banks.
- [2] For further details on the dysfunction in financial markets over this period, see FSB (2020).
- [3] We define cash as deposits with the central bank and financial institutions. Demand for physical cash also rose in the early stages of the pandemic (RBA 2020b).
- [4] These dislocations extended to the market for Australian Government Securities, as discussed in Finlay, Seibold and Xiang (2020).
- [5] Debt securities are initially issued in the ‘primary’ market, and are then be traded on the ‘secondary’ market. An investor purchasing a debt security in the primary market is extending credit directly to the issuer.
- [6] See RBA (2020c) for further discussion on the dysfunction in foreign exchange markets over this period.
- [7] See CGFS (2020).
- [8] CGFS (2020, pp 48–53) discusses strains in international US dollar funding markets during COVID-19.
- [9] The Federal Reserve also made US dollars available to other central banks on an overnight basis in exchange for US Treasuries through a new repo facility. This helped to support the functioning of the US Treasury market and ease strains in global US dollar funding markets by providing central banks an alternative source of US dollars other than from the sale of Treasuries. The European Central Bank also established a facility that provides euro liquidity to non-euro area central banks in exchange for euro-dominated collateral, including government bonds.
- [10] Central banks that entered the crisis with policy rates already at or below zero have not lowered rates any further.
- [11] At the same time, a reduction in interest rates reduced the amount of income that households and businesses got from deposits, and some may have chosen to restrict their spending. These two effects work in opposite directions, but a reduction in interest rates can generally be expected to increase spending through this channel. See Hughson *et al* (2016).
- [12] The effect of a lower interest rate on the exchange rate also depends on changes in other economies’ policy rates. A lower interest rate may have no observable effect on an economy’s exchange rate if interest rates in other economies decline at the same time. In this case, the lower rate is helping to offset an *appreciation* in the exchange rate that would have occurred had interest rates not been lowered.
- [13] The neutral interest rate is the policy rate that is considered to be neither stimulatory nor contractionary for an economy over the medium term. The long-term decline in neutral interest rates reflects a range of long-term structural trends that have increased demand for global savings relative to investment as a share of income (RBA 2019). For an overview of the drivers of global neutral interest rates see Rachel and Smith (2015). For a discussion on Australia’s neutral rate see McCrick and Rees (2017).
- [14] The minimum policy rate, the so-called ‘effective lower bound’, differs across economies. Some central banks have assessed the effective lower bound in their economy to be above zero, while other central banks have had negative policy rates for several years. This variation reflects a range of factors, including differing financial systems, economic structures, and policy frameworks and mandates. See McAndrews (2015). This was especially relevant at the onset of the pandemic because policy rate reductions into zero or negative territory may have exacerbated strains on banking systems, which were already facing potentially significant losses from loan defaults.
- [15] See CGFS (2019) for an overview of central banks’ assessments of the efficacy of unconventional monetary policy tools, including quantitative easing.
- [16] An investor who sells government bonds to the central bank may need to maintain a certain exposure to government bonds in their investment portfolio and so will choose to reinvest in government bonds of a different maturity. Others may invest in close substitutes, or in riskier assets, affecting the yield on those securities. Asset purchases thus contribute to lower yields in the targeted asset class, but also provide broader stimulus as investors rebalance portfolios into other assets.
- [17] For more information on the use of term funding schemes internationally in response to COVID-19, see RBA (2020d). For information on the Reserve Bank of Australia’s Term Funding Facility, see Alston *et al* (2020).
- [18] This is because the margin banks earn between the rate of interest charged on loans and that paid on deposits becomes compressed. As policy rates approach zero,

banks' capacity to lower lending rates is limited by the fact [19] See Lowe (2020).
that they are often unwilling or unable to lower their
deposit rates below zero.

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Economic Developments in India

Zan Fairweather and Maxwell Sutton^[*]



Photo: EyeEm – Getty Images

Abstract

Over recent decades, India's rapid economic growth has led to a substantial increase in its demand for Australian exports. However, India is currently facing the most significant setback to its economic development in decades as a result of COVID-19. Like in many other economies, the pandemic has severely affected near-term economic activity and exacerbated existing vulnerabilities in the Indian economy. While it will take some time for the Indian economy to recover, underlying fundamentals should support growth in the long term. This in turn should increase demand for some key Australian exports such as coking coal and education services, and so India will likely remain an important trading partner for Australia. The outlook for other resource exports such as iron ore and thermal coal is less positive because India is expected to be self-sufficient in these commodities.

India's economy has grown rapidly over the past few decades but growth had been slowing before the onset of COVID-19

India has recorded strong economic growth over the past 4 decades (Graph 1). Over this period, real per capita incomes have increased four-fold. India's share of global output has doubled to 7 per cent, and it is now the world's third largest economy in purchasing power parity terms. This growth has been primarily driven by an expansion of the services sector, in contrast to the manufacturing-led growth that characterised the development of

many of India's fast-growing east Asian peers (Lamba and Subramanian 2020). India's development lifted over 200 million people out of poverty over the decade to 2015 (United Nations Development Programme 2020).

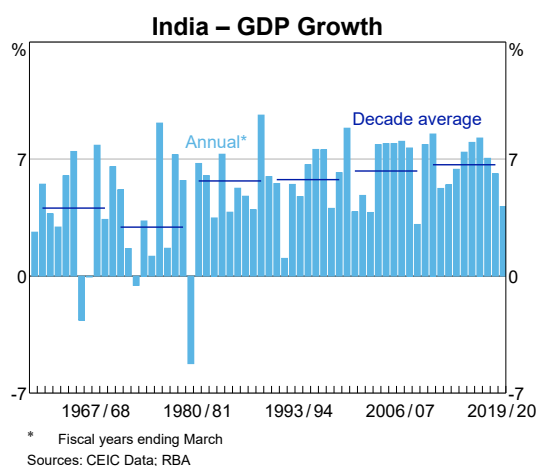
Before the onset of the COVID-19 pandemic, India was in the midst of its most significant slowdown in economic growth since the global financial crisis. Over the year to the March quarter 2020, GDP growth had slowed to just above 4 per cent, well below the decade average of around 7 per cent during the 2010s. Investment, which makes up one-

quarter of GDP, contracted for the first time in over a decade. The slowdown reflected a range of factors, including disruptions associated with partial demonetisation and the introduction of a goods and services tax, and a decline in credit growth associated with structural issues in the financial sector that culminated in the default of a high-profile non-bank financial company. Fiscal and monetary authorities had provided some support to the economy, although these measures had yet to arrest the slowdown before the beginning of the COVID-19 pandemic.^[1]

The Indian economy was severely disrupted by COVID-19

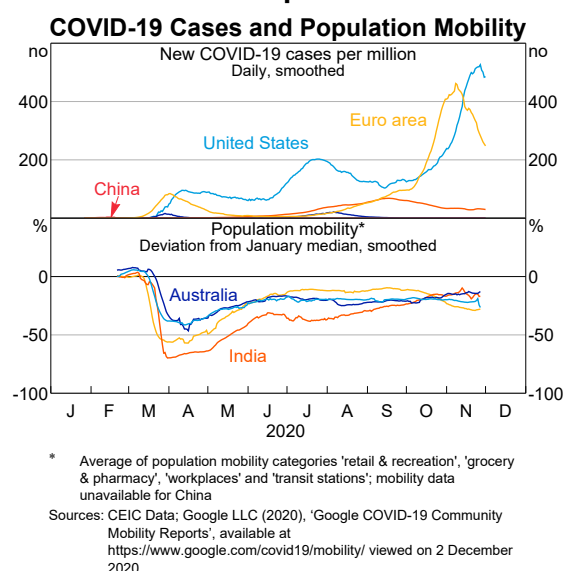
After the initial COVID-19 outbreak, Indian economic output fell by 25 per cent, one of the largest falls in GDP in the June quarter of 2020 of any economy. This was the result of the stringency and length of India's initial lockdown, which was one of the world's strictest (in terms of both intensity and population covered) and constrained the operations of most businesses (Graph 2). This resulted in a sudden loss of income for many of India's day labourers and led millions of migrant workers to leave urban areas and return to their villages (International Labour Organization 2020). The lockdown lasted from March until the end of May; restrictions were then progressively lifted except for areas with the highest case loads. India's lockdown appeared to slow the rise in new COVID-19 cases, although it did not fully suppress the virus.

Graph 1



India has so far provided similar levels of total fiscal support as other emerging market economies, but a much lower level of support than has been provided by advanced economies (Graph 3). As with many other emerging market economies, the Indian Government's ability to provide discretionary fiscal policy support has been constrained by concerns about preserving access to affordable financing and ensuring the sustainability of government debt (i.e. India is seen as having a lack of 'fiscal space') (IMF 2020a; IMF 2020b; Sitharaman 2020). India's fiscal support has included a comparatively small amount of on-budget measures such as additional spending and tax reductions.^[2]

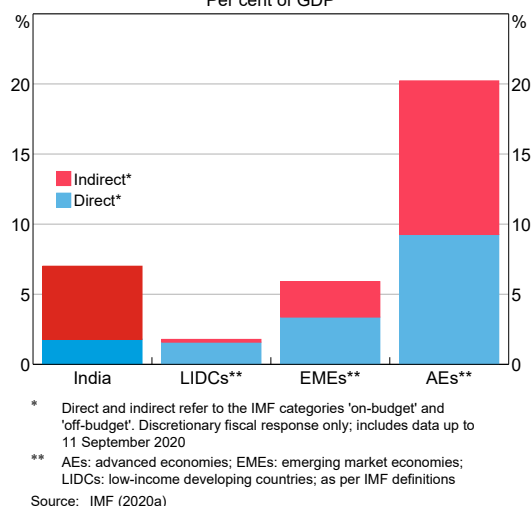
Graph 2



Graph 3

Fiscal Response to the COVID-19 Crisis

Per cent of GDP



The onset of the COVID-19 crisis was also associated with a material tightening in Indian financial conditions. Capital outflows from India and the deterioration in the economic outlook drove declines in equity prices, an exchange rate depreciation, and increases in government and corporate bond yields (Graph 4). However, these adjustments in financial market prices were modest in comparison to some other emerging markets, reflecting in part pre-existing restrictions on foreign participation in Indian capital markets.

The subsequent monetary policy response from the Reserve Bank of India (RBI), alongside the actions of fiscal and monetary authorities globally, helped to ease financial conditions. Since March, the RBI has lowered its policy rate by 115 basis points, purchased government bonds in the secondary market to improve market functioning, and provided additional liquidity to financial institutions to alleviate liquidity and funding stress (Ratho and Kumar 2020). To support household and corporate cash flows, the RBI also enacted a 6-month moratorium on repayments on bank loans between March and August, and established a resolution framework for borrowers affected by COVID-19 (RBI 2020a; RBI 2020b). However, with inflation remaining above the RBI's target range, the policy rate in India has not declined as much as in other emerging markets, though real interest rates are still markedly negative (RBI 2020c; RBI 2020d).

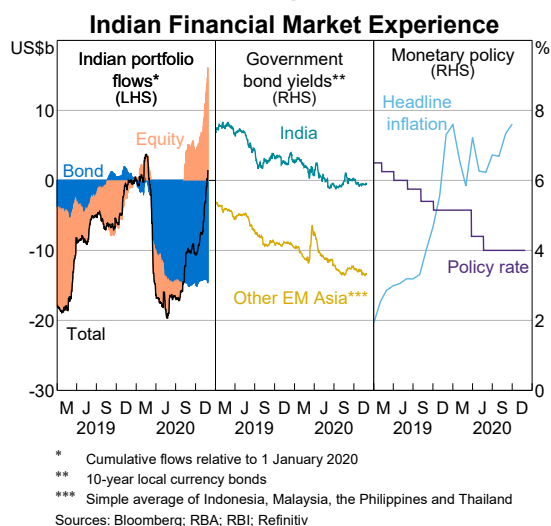
Most forecasters expect the Indian economy to continue the recovery that began in the second half of 2020 throughout 2021. However, the level of Indian economic output in 2021 is expected to remain around 15 per cent below where it was forecast to be before the onset of COVID-19; this is the largest projected output shortfall among major economies (Graph 5). These forecasts reflect both the large initial fall in output and constraints on economic stimulus measures given the lack of fiscal policy space and persistently high inflation.

Long-term growth prospects and challenges for policymakers

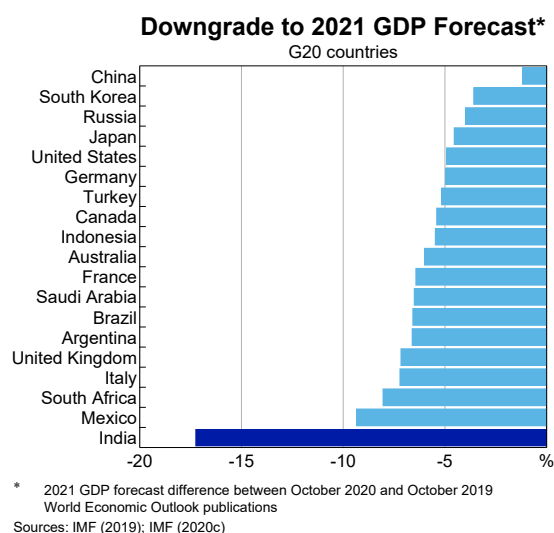
Looking beyond the pandemic, India's growth outlook remains promising given its favourable economic fundamentals.^[3] For instance, United Nations estimates of India's future population dynamics point to continued growth in the working-age population (Graph 6), though the effect of this on the economic outlook depends on education outcomes and whether recent declines in labour force participation persist.^[4] In addition, India's productivity is still low, and there is substantial potential for 'catch-up' growth through the adoption of new technologies, movement of workers into higher productivity sectors and locations, and increases in human capital (Anand, Kochhar and Mishra 2015).

However, there are a number of significant challenges that could weigh on the longer-term

Graph 4



Graph 5



economic outlook, some of which have been exacerbated by the pandemic. Two key challenges in the recovery phase and beyond will be ensuring the sustainability of government debt and strengthening India's banking system.

The sustainability of government debt

Government debt relative to GDP has increased markedly as a result of the pandemic because of a combination of lower economic activity and revenue, and higher government spending (Graph 7). Larger government deficits are likely to be required in the near term to support the economic recovery; premature fiscal consolidation could lead to economic scarring (IMF 2020a). The resulting increase in government debt is expected to leave India with a much higher burden of interest payments than most other Asian economies (Graph 8). Furthermore, a slower-than-expected economic recovery would worsen government debt dynamics by depressing government revenues and further delaying fiscal consolidation.

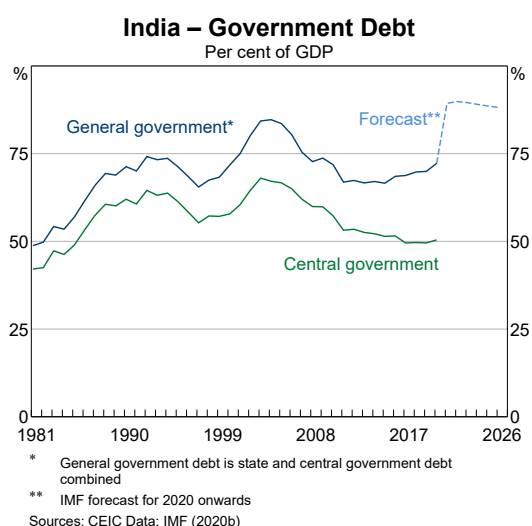
However, a combination of high potential economic growth and a credible path for fiscal consolidation should support the sustainability of India's government debt over the longer term. The IMF forecasts that general government debt to GDP will start to decline from 2021 as growth returns to the previous decade average of around 7 per cent and government deficits begin to consolidate (IMF 2020c). Bringing more activity into the formal sector of the economy, combined with recent changes to simplify the tax system, have the potential to

broaden India's tax base and improve the government's ability to commit to fiscal consolidation (IMF 2019). An easing of restrictions on foreign investment or an increased role for foreign investors could help to reduce the cost of servicing a larger debt stock, albeit at the risk of greater portfolio outflows during crises.^[5]

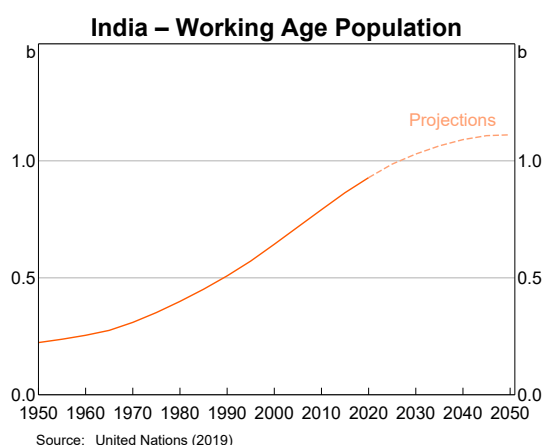
Strengthening India's financial system

The COVID-19 crisis has complicated India's efforts to strengthen its financial system. In particular, the disruption to activity is expected to compound banks' problems with non-performing loans.^[6] Two-thirds of public sector banks' (PSBs) customers had paused repayments on their loans following the loan repayment moratorium (RBI 2020a).

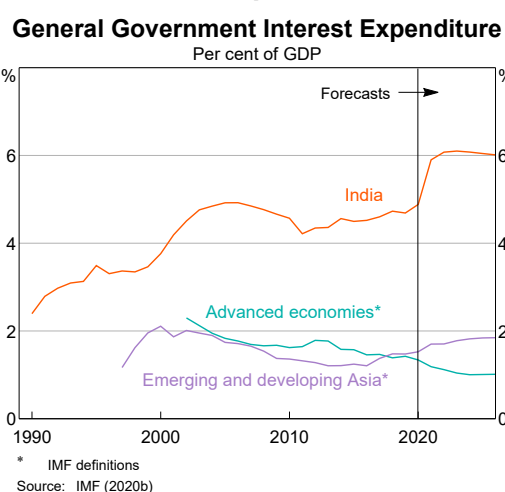
Graph 7



Graph 6



Graph 8



Additionally, India's banks have absorbed much of the extra government bonds issued since March and have provided additional lending to non-bank financial corporations, which were already facing difficulties prior to the crisis (RBI 2020a). The resultant poor earnings and capitalisation levels at some banks is likely to diminish the transmission of changes in the stance of monetary policy to effective lending rates and more generally limit the ability of banks to extend new loans (Muduli and Behera 2020).^[7]

Beyond COVID-19, the high degree of regulation and state ownership of India's banking system remains a structural challenge for India. India's PSBs own over 60 per cent of banking system assets in a financial system dominated by banks (Graph 9). The Indian Government also has some influence over how banks allocate credit; currently banks are required to allocate much of their credit to priority sectors specified by the RBI (RBI 2020e). From the early 2000s to the mid 2010s, PSBs were active in financing the infrastructure sector in line with the government's priorities – many of these exposures became distressed and some were recorded as non-performing loans (Vishwanathan 2016; RBA 2019). Indian banks are also subject to a Statutory Liquidity Ratio (SLR) that requires them to hold a material share of their assets in government securities, currently 18 per cent, increasing their exposure to changes in government bond yields and affecting their profitability (IMF 2017).

Strengthening India's financial system could provide significant benefits to India's long-term growth prospects. In 2017, the IMF identified a number of reforms including recapitalising and restructuring the PSBs, increasing private sector participation in the banking system, carefully reducing the SLR and re-evaluating the use of directed lending (IMF 2017). The IMF expected that these reforms would boost credit growth, while improving financial incentives and reducing the government's exposure to possible losses. India had made some progress in instituting these reforms prior to the pandemic. Private sector banks had been growing much faster than public sector banks for some time and since the second half of 2019, the Indian Government has consolidated 10 PSBs into 4, and recapitalised some

PSBs (RBI 2019; RBI 2020f).^[8] Nevertheless, the IMF reaffirmed the importance of this reform agenda in 2019, and the scale of the challenge is likely to have increased this year (IMF 2019).

Indian demand for Australian exports – outlook and opportunities

As India has grown more prosperous and become a more significant part of the global economy, its demand for many of Australia's goods and services has increased. India was the destination for less than one per cent of total Australian exports in the 1990s; by 2019, this share had increased to around 4 per cent. Australia's main exports to India are coking coal and education services, which collectively accounted for around three-quarters of total exports to India in 2019 (Table 1).

The longer-term outlook for education exports to India is strong

Australia's education exports to India have grown substantially over the past 2 decades and are now the second largest export category. India is Australia's second largest education export market after China, and one of the fastest growing (Graph 10).^[9] Around half of these Indian students are enrolled in university education, and one-third in vocational education (VET). Indian students are more likely than other international students to work while studying in Australia, which confers many benefits to the Australian economy. In the short term, there is a risk that a weaker Australian labour market as a result of the pandemic could

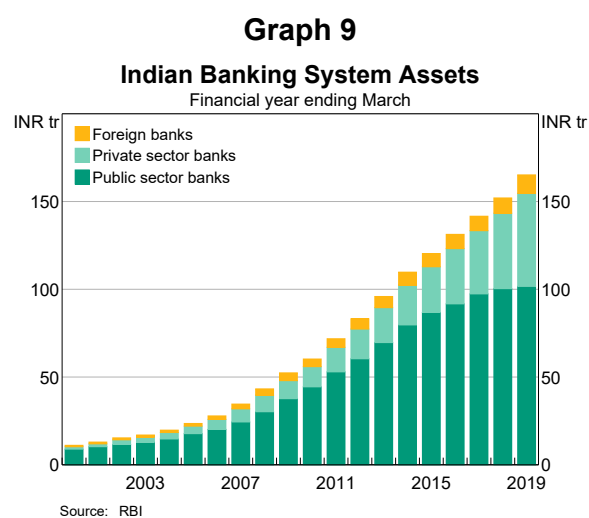


Table 1: Australian Exports to India

	Value, \$b		Share of Australian exports, %	
	2000	2019	2000	2019
Coking coal	0.6	10.2	0.4	2.1
Other goods	1.2	3.8	0.8	0.8
Education	0.3	6.4	0.2	1.3
Tourism	0.1	0.5	0.0	0.1
Other services	0.1	0.6	0.1	0.1
Total	2.3	21.6	1.6	4.4

Sources: ABS; Department of Industry, Science, Energy and Resources (2020)

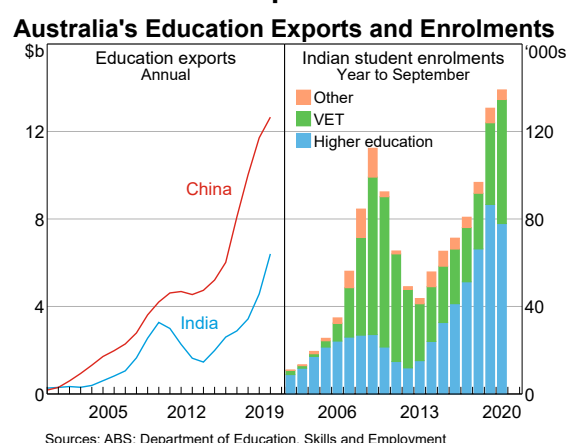
depress the demand from Indian students to study in Australia even after borders are reopened.^[10]

In the longer term, there are good reasons to be optimistic about the outlook for India's demand for education, including those opportunities offered in Australia. A combination of a large tertiary-age population, rising standards of living and high relative returns to education and skills suggests the outlook for India's future education demand is strong. Indeed, given the importance of India's services sector, an essential pathway for young people to improve their living standards is to become an educated professional. This is particularly relevant in India given that it has fewer lower-skilled manufacturing jobs than other emerging market economies at a similar level of development. Continued urbanisation and formalisation of the labour market is also likely to open up further opportunities for educated individuals. Indian Government policy is also supportive. In 2020, the Indian Government

presented its first National Education Policy (NEP) in 3 decades; a key target in the NEP is to increase the enrolment rate in higher and vocational education for 18–23 year olds from 26 per cent to 50 per cent. If achieved, this means that around 30 million additional students will be enrolled in higher education by 2035.

Growing demand for Australian education from Indian students could arise from scarcity of suitable domestic education, as well as demand for the unique opportunities of studying abroad. Supplying high-quality education opportunities for India's large and growing number of young people has remained a challenge, and partly explains the rapid growth in Indian students seeking education abroad (Graph 11). The NEP aims to meet India's future education needs domestically by increasing public investment in education, while limiting the involvement of overseas institutions to 'internationalisation at home' (i.e. satellite campuses of international institutions).^[11] However, even if India scales up the capacity and quality of domestic education, education abroad will remain appealing for a subset of students. The opportunity to study in English at well-regarded institutions and work abroad during study and after graduation has attracted a growing number of Indian students to countries like the United States, the United Kingdom, Canada and Australia.

Relative to other alternatives, Australia has experienced particularly fast growth in demand in the past decade, potentially reflecting Australia's reputation as a welcoming country with an attractive lifestyle for international students and relatively favourable visa settings for work during

Graph 10

and after study (Varghese 2018). Maintaining even moderate growth in education exports would require attracting only a small share of the millions of additional Indian students that will be looking for education over the next 2 decades.

Urbanisation will support demand for coking coal, but not iron ore

India has experienced near uninterrupted growth in steel production for 2 decades, and has become the second highest producing nation in 2018 (Graph 12). As a result, India has become the top destination for Australian coking coal exports, which is also Australia's most valuable export to India.

In mid 2020, India's coking coal imports declined significantly as a result of disruptions to steel production caused by the pandemic (and the associated lockdown), but recovered towards the end of 2020 as steel production resumed. Australia's Department of Industry, Science, Education and Resources forecasts steel production to return to its pre-COVID-19 growth rate in 2021, but this will be a lower level of steel production than was forecast prior to the pandemic (Department of Industry, Science, Energy and Resources 2020). Given the high degree of uncertainty surrounding the pandemic in India and globally, there is still the risk of a deterioration in the value of Australian coking coal exports to India over the next few years.

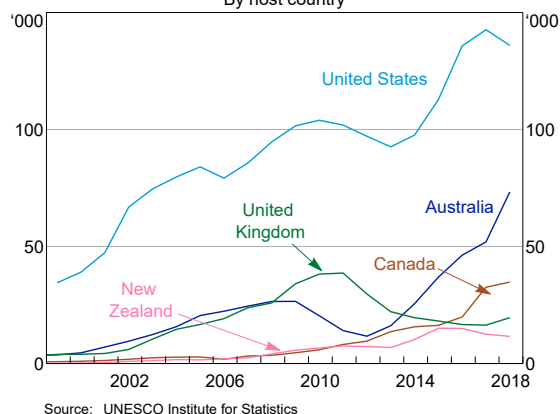
However, the longer-term outlook for Australian coking coal exports remains robust. India's steel

consumption per capita is still relatively low, and the United Nations projects that around 400 million additional people will live in urban areas in India by 2050. This will support continued growth in dwelling construction and infrastructure investment, which are both heavily steel-intensive.^[12] In light of this, in its 2017 National Steel Policy the Indian Government set targets for steel consumption and production to double by 2030/31 (Government of India Ministry of Steel 2017). Meeting these targets would require only a modest increase in the growth rate of steel production from recent years.

India's steelmaking industry is likely to remain coking coal intensive. The Indian Ministry of Steel has a target to increase the use of the Basic Oxygen Steelmaking (BOS) method to 60–65 per cent of steel produced by 2030/31, from 45 per cent in 2018 (Government of India Ministry of Steel 2017). This is favourable for Australia because, unlike other methods of steel production, the BOS method requires coking coal as an input. India has only small reserves of coking coal suitable for steel production (Government of India Ministry of Coal 2019).^[13] As a result, steel producers rely on imports of coking coal, particularly from Australia, which currently accounts for around 80 per cent of India's total coking coal imports. Australia has a comparative advantage in supplying coking coal to India due to Australia's reliable supply and higher-quality coking coal, as well as closer geographical proximity relative to Canada and the United States (the other main suppliers of India's coking coal).

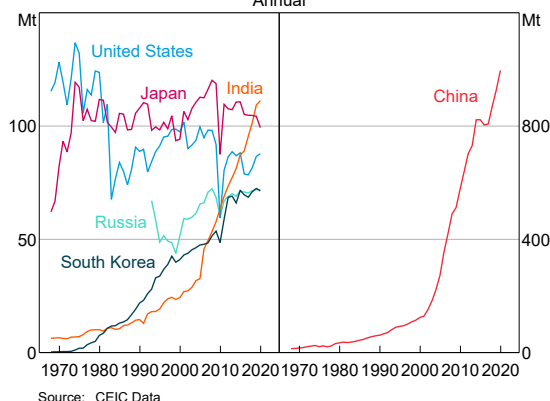
Graph 11

Indian Students Abroad
By host country



Graph 12

Steel Production
Annual



Strong growth in steel production in China has, in the past, led to demand for Australian iron ore exports, another key input in the steel production process. However, as a large producer of iron ore with significant domestic reserves, India has reasonable prospects for self-sufficiency in the medium term.^[14] That said, rapid growth in steel production and the potential continuation of regulatory uncertainty and product quality issues may provide some scope for Australia to increase its exports of iron ore to India in the future (Varghese 2018).

India has substantial future energy needs, but Australian thermal coal is likely to play a modest role in meeting them

India is likely to experience the largest growth in energy demand of any country in the next 2 decades (International Energy Agency 2020). In the past, the rapidly growing energy needs of a number of large Asian nations has supported strong demand for Australian energy exports, including thermal coal. However, there are compelling reasons to believe this will not be the case for India.

While thermal coal currently powers three-quarters of electricity generation in India, more new renewable energy plants have been added to the power grid than coal-fired plants for the last 4 years. By 2040, coal is forecast to produce around a third of electricity, while renewables are projected to produce over half of electricity (Graph 13). The recent growth in renewable energy follows strong government support for the sector and declining costs for renewable power projects. Recent government-run renewable project auctions have revealed costs for solar projects lower than the cost of coal-fired power for the first time (Dvorak 2020). The International Energy Agency expects these trends to continue, which would further support increasing uptake of renewables in the grid (International Energy Agency 2020). The increasing prevalence of renewables implies a levelling off of the coal-fired power sector's growth in the medium term.

India is well placed to provide the domestic coal required to service this level of generation given recent government targets, policy reforms and

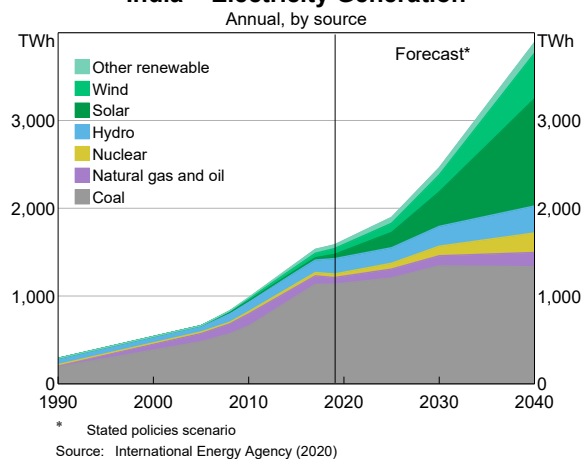
India's large thermal coal reserves. The government is aiming to have zero thermal coal imports by 2023/24, reversing the rise in thermal coal imports since 2010. This target will be achieved by increasing production targets for state-owned coal producers, and reducing barriers to foreign investment and commercial mining. Partly as a result, import requirements are forecast to level off over the next few years (Department of Industry, Science, Energy and Resources 2020). Even if India falls short of its production targets, imports have mostly been sourced from Indonesia in the past due to their similarity with lower energy density Indian coal and lower costs relative to Australian thermal coal (Department of Industry, Innovation & Science 2019).

Conclusion

The outbreak of COVID-19 has been the largest shock to economic activity in India in at least 60 years. The current crisis will exacerbate pre-existing vulnerabilities, including a lack of fiscal space and a high level of non-performing loans, and this could impede the pace of the near-term recovery. Nevertheless, India's economic outlook continues to be supported by a range of favourable structural factors, including a growing working-age population and prospects for continued urbanisation, which should support the outlook for some Australian exports, including education and coking coal. The outlook for other resource exports such as iron ore and thermal coal, which have in the

Graph 13

India – Electricity Generation



past been key exports to some fast-growing east Asian economies, is not as encouraging given the stronger prospects for self-sufficiency in these commodities. As a result, India is likely to remain an important trading partner for Australia, but growth

in exports of the kind experienced with China in the past few decades seems unlikely. ❖

Footnotes

- [*] Zan Fairweather is from Economic Analysis Department and Maxwell Sutton is from International Department. The authors extend their sincere thanks to Lea Jurkovic, who provided substantive analysis in the earlier stages of this work.
- [1] For further details, see RBA (2020).
- [2] Between March and November, the Indian Government announced its fiscal response to the crisis in 3 phases. In March, India introduced a support package to bolster the healthcare system and provide free food grains and cash transfers to India's most vulnerable citizens, many of whom faced a sudden loss of income with a limited safety net during the initial lockdown. In May, small and medium enterprises were offered government-guaranteed loans and equity injections to support their cash flows amid steep falls in revenue during lockdowns. Once most of the country had moved out of lockdown by October, the government also announced further stimulus measures including consumption vouchers and increased infrastructure spending targets to support the recovery.
- [3] For further detail on India's long-run growth fundamentals, see Ma and Roberts (2018).
- [4] In the past 2 decades, India's labour force participation rate has declined significantly and is particularly low for women relative to other Asian countries. As a result, the rapid growth in India's working-age population has not led to equally rapid growth in the size of the labour force. Part of this can be explained by higher enrolment of young women in education, which can reduce labour force participation in the short run but increase it in the longer run if the labour market is able to provide sufficient opportunities for educated women (Das *et al* 2015; Verick 2014).
- [5] The RBI has established 2 schemes to provide foreign investors with additional access to its government bond market, which have so far generated moderate investment flows. The Indian Government has also recently pushed for its bonds to be included in international bond indices, which some market analysts estimate could generate portfolio inflows to India of around INR 1½ trillion (Sircar 2020). However, meeting the inclusion criteria would require removing some capital controls and maintaining or improving India's sovereign credit rating.
- [6] Prior to the crisis, significant stocks of non-performing assets (NPAs) had weighed on public sector banks' ability to efficiently allocate credit, contributing to slower economic growth (RBA 2020). Indian banks' NPA ratios improved at the start of 2020; however, this largely reflects substantial capital injections from the Indian Government and the loan repayment moratorium, which has allowed banks to delay recognition of non-performing loans until the moratorium ends (RBI 2020a; Moody's Investors Service 2020).
- [7] Like many countries, including Australia, India requires banks to hold a minimum amount of funds (known as capital) relative to their loans to absorb losses if banks' borrowers default on their loans.
- [8] Some market analysts expect that the Indian Government may need to provide PSBs with further capital injections, equivalent to 0.25–0.9 per cent of GDP, before the PSBs can meaningfully contribute to credit growth (Moody's Investors Service 2020; Fitch Ratings 2020).
- [9] An exception is the decline in education exports between 2009 and 2012, following widespread media coverage of incidents of violence against Indians, including students, living in Australia. Other factors may have included a tightening in visa rules and the global financial crisis.
- [10] For further details on how travel restrictions associated with the COVID-19 pandemic affected Australia's education exports, see (Grozinger and Parsons 2020).
- [11] The NEP proposes allowing satellite campuses of top foreign universities in India for the first time. Given Australia has 7 universities in the top 100, this change could be positive for linkages between India and Australia and increase the visibility of Australian universities. However, the direct impact on education exports will be much smaller from Indian students at Australian satellite campuses as fees may be regulated at lower levels and Australia will not be exporting 'living expenses', which are a significant component of total education exports.
- [12] India's urbanisation is likely to be less steel intensive than China's, as height restrictions in Indian cities favour less steel intensive low-rise urban sprawl over high-rise buildings.
- [13] In 2018/19 India produced 40 million tonnes (Mt) of coking coal, around 5 Mt of which is suitable for steelmaking after being washed. Over the same period, India imported 51 Mt of coking coal, including 37 Mt from Australia.

[14] India produced 205 Mt of iron ore in 2018, making it the world's third-largest producer behind Australia and Brazil.

With small import and export volumes relative to production, it is also mostly self-sufficient.

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Shadow Financing in China

Maxwell Sutton and Grace Taylor^[*]



Photo: DANNY HU – Getty Images

Abstract

In 2016, Chinese authorities launched a campaign to reduce risks in China's shadow finance system. The campaign managed to reduce the size of China's shadow finance system, which has declined from over 60 per cent of GDP to around 40 per cent. This has been a positive development from a systemic risk perspective. Regulatory reform has improved the visibility authorities have over the financial system and improved their ability to target policies to address emerging risks. However, savers now have fewer investment options that offer attractive returns, while financial intermediaries have faced increased pressures on both the assets and liabilities sides of their balance sheets. In addition, the supply of credit has been curtailed in sectors that rely on shadow finance. The COVID-19 pandemic has further highlighted the difficult trade-off policymakers face between containing longer-term financial system risks while supporting economic growth in the near term.

Background

Shadow financing is an important source of finance in China. Shadow finance encompasses credit intermediation undertaken outside of the formal banking system, by banks through their off-balance sheet activities, and by non-bank financial institutions (NBFIs) (CBIRC 2020). In recent years, regulators have sought to reduce the risks that shadow financing poses. This article examines the implications of this regulatory tightening for savers,

borrowers, intermediaries, policymakers and systemic risk in the financial system.

Shadow financing grew rapidly in China following the global financial crisis as a result of efforts to stimulate the economy with construction-related spending (Bowman, Hack and Waring 2018). Regulatory and legislative constraints meant it was difficult for local governments and property developers to source funding for this spending from the formal banking system. Caps imposed by

regulators on bank deposit rates and loan-to-deposit ratios limited banks' ability to raise on-balance sheet funding that they could use to lend to governments, state-owned enterprises (SOEs) and other businesses. In response, non-bank financial institutions began to provide more loans, while banks adapted by raising off-balance sheet funding to lend to restricted industries via NBFIs. Demand for shadow finance products was driven by the higher returns they offered compared with those available in the formal banking system, and the increased diversity of products available to investors.

The relationship between China's formal and informal financial systems has some similarities with those found in advanced economies prior to the global financial crisis. In both, NBFIs provided loans and funded their activity by issuing wholesale debt and selling securitised assets (Financial Stability Board 2017). Banks acquired some of these assets, creating a high degree of interconnectedness between the formal and informal financial systems. Banks also engaged in shadow financing activity via off-balance sheet entities. This was particularly the case in China, where shadow lending by banks' own off-balance sheet entities occurred to a much greater extent than in advanced economies; banks accounted for around two-thirds of shadow financing activity in 2016 (Sun 2019).

The risks posed by shadow financing were exacerbated by the use of short-term liabilities. Institutions funded much of their shadow lending activity by offering asset management products (AMPs). A heavier use of short-term liabilities makes shadow financing entities more vulnerable to sharp contractions in available funds because these entities often do not have access to liquidity facilities afforded to the formal banking sector (Adrian and Jones 2018).

The shadow financial system had also become very complex and opaque, making it difficult for regulators to conduct risk assessments. An investment could be channelled through multiple NBFIs, some of which had multi-layered liabilities (Bowman, Hack and Waring 2018). In addition, banks often sold non-performing loans (NPLs) to NBFIs and repurchased them as securities, which

obscured the quality of the banks' assets. Underlying this system was widespread moral hazard; consumers and businesses that provided the ultimate funding believed that banks would stand by their shadow financing products. This led to differences between actual and perceived risk in the financial system, which helped NBFIs and their sponsoring banks to minimise the effect of capital and liquidity regulations on their activities (PBC 2020a).

The campaign to reduce shadow financing risks

Authorities began to rein in shadow financing in 2016 by introducing a range of measures to reduce leverage, improve transparency and strengthen risk management practices in the financial system. The People's Bank of China (PBC) began to conduct quarterly macroprudential assessments of banks, which were extended in 2017 to include off-balance sheet products, including trust and entrusted loans, and AMPs (Chui and Upper 2017). Banks that scored poorly in certain areas of these assessments faced penalties including: higher required reserve ratios; higher central bank borrowing costs; and suspension as primary dealers. The authorities also increased the amount of debt that local governments could directly issue, reducing a key source of demand for shadow financing (Holmes and Lancaster 2019).

In 2017, the PBC and other regulators announced a series of reforms to the asset management sector to be phased in over a number of years. The regulations sought to address a range of risks related to non-bank financial intermediation, including regulatory arbitrage, implicit guarantees, interconnectedness and liquidity risks (RBA 2018). In particular, the reforms prohibited AMP issuers from providing principal and income guarantees and forbade borrowing to invest in AMPs. The aim of the reforms was to transform AMPs into investment products rather than off-balance sheet deposits. The deadline for implementing these reforms has been postponed multiple times, although financial institutions have made some progress (PBC 2020b). Coordination among regulatory authorities has also improved in recent years, which was partly a

response to concerns over shadow financing activity exploiting regulatory arbitrage. A new Financial Stability and Development Committee was established under the State Council, consisting of the main Chinese financial regulators (State Council 2017).^[1] The China Banking Regulatory Commission (CBRC) also merged with the China Insurance Regulatory Commission (CIRC) to improve prudential oversight, becoming the China Banking and Insurance Regulatory Commission (CBIRC). The merger clarified regulatory responsibility for shadow finance activities and reduced the duplication of regulations (State Council 2018).

The stock of shadow financing activity has contracted from over 60 per cent of GDP to around 40 per cent as a result of these measures (Graph 1).^[2] This has reduced the risk that shadow finance poses to China's financial system and the broader economy. Even though banks and NBFIs have continually adapted their business practices in response to regulatory changes, the restrictions on shadow financing have contributed to lower aggregate credit growth. Overall, the regulatory tightening and subsequent decline in shadow financing activity have had wide-ranging implications for participants in China's financial system, and the financial system as a whole.

Implications for savers

Returns on deposits in the formal banking sector have historically been constrained by the use of

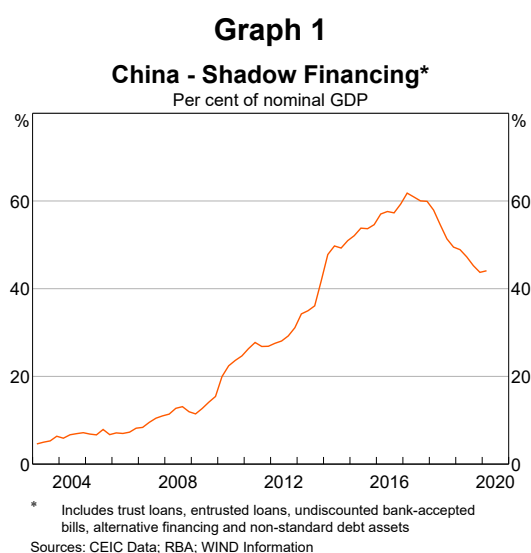
benchmark deposit rates. This has materially affected Chinese households, which typically have a high propensity to save (Zhang *et al* 2018). In response, many households have sought higher returns in the shadow financing sector by investing in products like AMPs (Graph 2). Shadow finance products have also provided investors with a greater diversity of investment products to choose from. While the PBC continues to take steps to liberalise lending rates, deposit rates are still determined by the PBC.

The regulatory tightening on shadow financing has made investing in shadow financing products less attractive to households and businesses. Policies such as banning principal and income guarantees meant that savers have had less incentive to invest their funds in the shadow financing sector. As a result, in 2018, growth in saving deposits picked up, while shadow financing assets started to contract (Graph 3). Financial institutions then adapted by replicating the higher returns of shadow financing products with on-balance sheet products such as structured deposits (discussed below). However, regulators have subsequently responded to ensure that the returns offered, to the extent they are guaranteed, are in line with benchmark rates.^[3]

Measures have also been introduced to make it easier for savers to understand the risks from investing in shadow financing products. For instance, new AMP regulations have imposed stricter reporting requirements that make it easier for savers to monitor the investments that underlie shadow finance products. Among other things, this includes the requirement that AMP issuers frequently report a marked-to-market value to investors (RBA 2018).

Implications for borrowers

Entities borrowing through shadow finance channels have typically had restricted access to traditional bank credit. This includes local governments, private firms and real estate developers (Bowman, Hack and Waring 2018). The contraction in shadow financing since 2017 has therefore disproportionately affected activity in these sectors.



Assessing trends relating to borrowers of shadow finance is hampered by a lack of data. Data on assets of trusts, a key subgroup of shadow financiers, show that trust company loans to most sectors have declined since 2017 (Graph 4). These data do not separately identify private and state-owned firms, but it is likely that private firms' use of shadow financing slowed in line with the broader decline in shadow finance.^[4]

Real estate is the only industry where trust company investments have increased since 2017. This is consistent with authorities continuing to restrict the flow of formal credit to the real estate sector (PBC 2020c). However, trust company investments in real estate began to decline in 2019 when the authorities turned their attention to the sector. Access to credit could get even more challenging for some property developers if the

PBC goes ahead with a 'three red-line' policy to curb lending to property developers in January 2021 (Qian and Mo 2020).^[5]

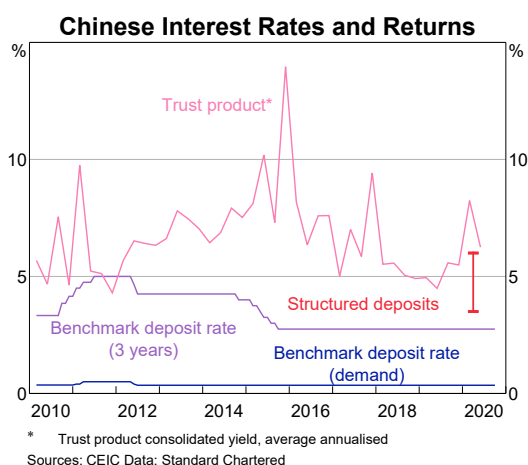
In contrast, local governments have been less affected by the contraction in shadow financing because of the central government's strategy of 'opening the front door and closing the back door'. Under this policy, local governments were allowed to start raising debt in a transparent fashion directly from bond markets and could convert debt from local government financing vehicles into local government bonds under the debt swap program (Holmes and Lancaster 2019). Local government borrowing remains subject to strict quotas but is less reliant on shadow finance than it was prior to 2015.

Implications for financial intermediaries^[6]

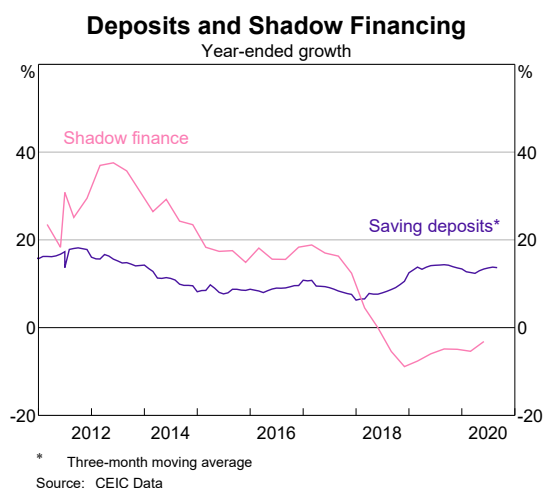
Asset quality

Some of the risks that had built up on the balance sheets of NBFIs over the previous decade have become more apparent as shadow financing has become more restricted. Some borrowers can no longer rely on continued access to finance from NBFIs to service their existing stock of shadow borrowing or to roll over maturing products. Further, the regulatory tightening led to a sharp fall in shadow financing growth. Although these developments have helped to reduce risk in China's financial system, weaker economic growth has led to a deterioration in shadow financing asset quality. For instance, the value of distressed trust assets has

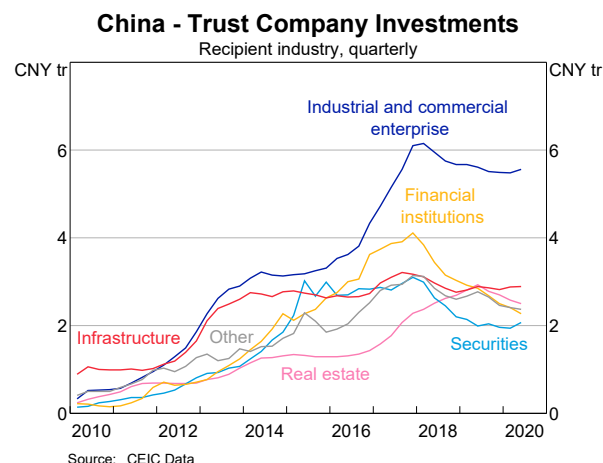
Graph 2



Graph 3



Graph 4



increased strongly over the past couple of years from less than CNY 200 billion in 2018 to over CNY 600 billion in 2020, which is around 3 per cent of total trust assets (Graph 5).^[7]

Over the past year, authorities have attempted to unwind some of the perceived implicit guarantees underpinning China's financial system by allowing some assets and financial institutions to default for the first time in decades, most notably Baoshang Bank. In 2020, at least 4 of China's 68 trust firms have had investor protests outside their offices due to concerns that they will not recoup their investment (Wright and Feng 2020a). The perception of investors that implicit guarantees are weakening poses a considerable risk to the financial system in the near term, partly because other financial institutions are exposed to or have claims on NBFIs. However, the weakening of implicit guarantees is expected to bring benefits in the long term.

The direct links between banks and NBFIs mean that a deterioration in asset quality at NBFIs also implies a deterioration in asset quality at banks. Further, the factors that have contributed to a decline in asset quality at NBFIs may have led to a deterioration in asset quality for banks' off-balance sheet assets, although there are no data available to verify this.

Links between NBFIs and banks in China's financial system

A key objective of the regulatory reforms has been to reduce the risk posed by the links between banks and NBFIs. This has included reducing the size of

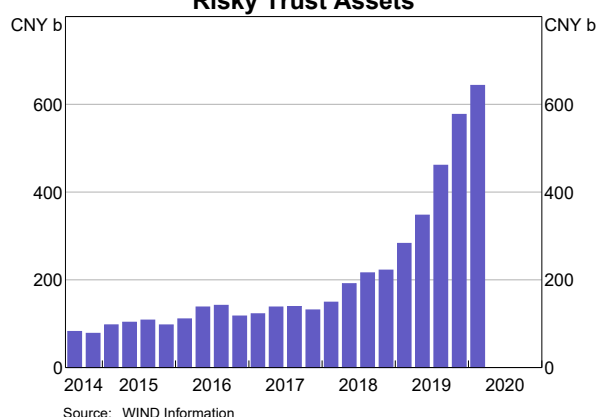
banks' on-balance sheet exposures to NBFIs and improving the transparency of banks' off-balance sheet exposures. In particular, regulators have sought to reduce so-called channel investing, which occurs when banks lend or invest using NBFIs as an intermediary (RBA 2017). Channel investing was appealing to banks because it allowed them to circumvent regulatory requirements, such as capital and loss provisioning, and extend loans to borrowers they were prohibited from lending to directly. Reforms also tightened the regulatory requirements for banks' off-balance sheet investments in NBFIs, which typically occurred via AMPs.

These reforms have significantly curtailed the amount of funding NBFIs receive from banks. Growth of banks' lending to NBFIs slowed sharply over 2017 and 2018, although the level remains high (Graph 6). The breakdown of trust assets by function shows a sharp decline in trust assets for the purpose of 'affair management' since 2017, which private sector analysts consider to be a proxy for channel investing (Graph 7).

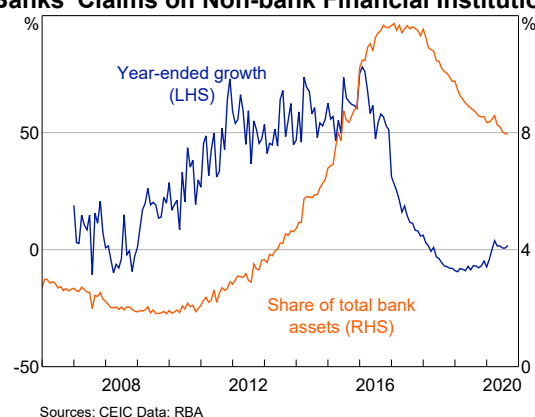
Bank liabilities

Banks have responded to reforms restricting off-balance sheet funding by offering above-benchmark deposit rates to attract on-balance sheet funding such as structured deposits. Structured deposits offer higher returns than traditional deposits by linking the interest rate on the product to a derivative on an underlying instrument, such as a stock or exchange rate.^[8] In

Graph 5
Risky Trust Assets



Graph 6
Banks' Claims on Non-bank Financial Institutions



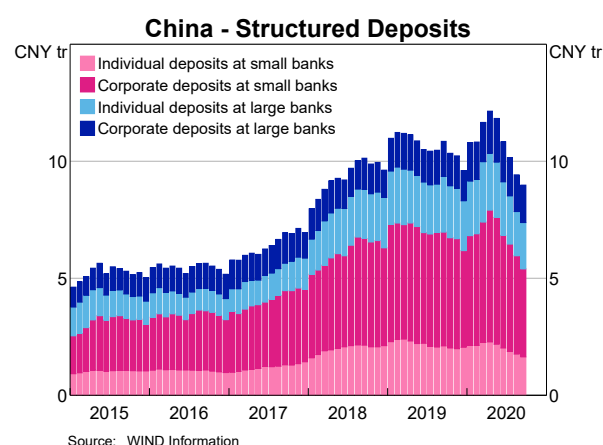
practice, the funds raised through structured deposits are often not invested in the underlying assets, which could expose banks to capital losses if these liabilities are not hedged appropriately (Wright and Feng 2020b). Chinese regulators have raised concerns that investors are unlikely to understand the complexity and risks involved in structured deposits, particularly those that are designed to replicate the features of principal-guaranteed AMPs (CBIRC 2019a).

Most structured deposits are issued by smaller banks and tend to be held by corporations rather than households (Graph 8). Although they have increased in popularity, structured deposits remain a minor funding source, accounting for around 6 per cent of total on-balance sheet funding for smaller banks and around 3 per cent for larger banks (Graph 9). The CBIRC has issued several notices over the past 2 years that have tightened restrictions on structured deposits and halted their growth as a funding source. Although the shift to more on-balance sheet liabilities improved transparency, regulators were concerned that the marketing of these products was misleading and that they undermined the PBC's benchmark interest rate system.^[9] In June 2020, the CBIRC directed large and medium-sized banks to reduce the amount of funds held in structured deposits and to stop issuing structured deposits where yields do not reflect the level of risk (Hongyuran and Ziyi 2020).

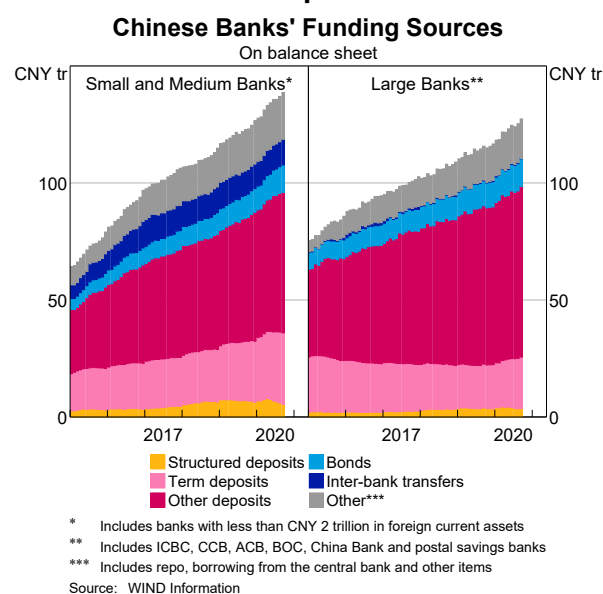
For banks that do not have a derivatives trading licence, and therefore cannot offer structured deposits, 'smart' deposits have grown in popularity

as a way of attracting customers. Smart deposits are a type of term deposit that offer significantly higher interest rates and allow customers to withdraw their money ahead of schedule. There are no data on banks' use of smart deposits, although term deposits account for about 20 per cent of bank funding. Small and medium-sized banks are the main issuers of smart deposits (Xinhua 2020). Small banks are continuing to innovate to attract deposit funding, such as by offering group savings plans with higher interest rates (Xiaomeng and Shen 2020). The regulatory tightening has restricted the ability of banks to issue profitable AMPs, which has squeezed bank profit margins (Ding, Fung and Jia 2019).

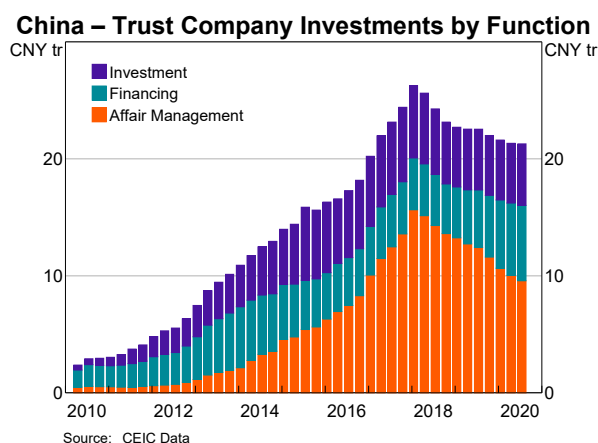
Graph 8



Graph 9



Graph 7



Bank capital

The impact of regulatory reforms on bank capital is difficult to assess due to data limitations. Data on bank funding sources suggest that regulatory reform has not materially affected the size or composition of bank balance sheets, which has followed a consistent trend over the past 5 years.

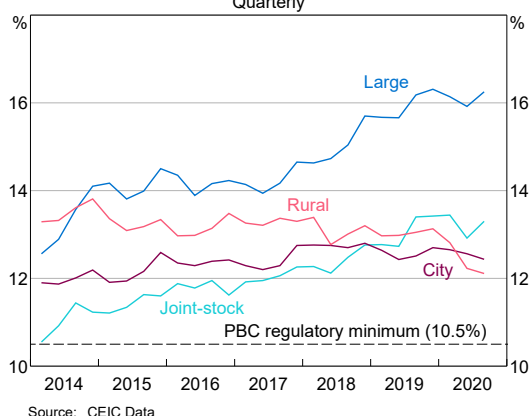
Banks typically held riskier assets and NPLs off-balance sheet through shadow financing vehicles, which lowered their capital requirements. The shift of activity onto balance sheets has improved transparency and capital provisions now more accurately reflect banks' activity. However, reported capital adequacy may have declined if banks have been unable to set aside additional capital. Authorities have continued to monitor banks' capital levels, which have generally increased for large and joint-stock banks (Graph 10). In contrast, capital adequacy ratios at city and rural commercial banks have not increased since 2014, and the latter declined materially in the first half of 2020. In April, the PBC stated that 3,400 of China's 4,005 small and medium-sized banks met the minimum required capital adequacy ratio of 10.5 per cent (PBC 2020d). Further, in July, the Chinese authorities allowed local governments to use some of the proceeds from special purpose government bonds to recapitalise some small and medium-sized banks (Siwei and Yingzhe 2020).

Implications for policymakers and systemic risk

The reforms in recent years have improved prudential oversight and supervision. Prudential authorities have been given greater powers and have improved inter-agency collaboration and regulatory coverage. Draft legislation indicates that the regulatory powers of the PBC will be enhanced further, making it the primary regulator in China's financial system (PBC 2020e). Banks have also brought more of their activity and exposures onto their balance sheets, improving the transparency of the financial system and reducing interconnectedness. However, authorities will need to remain alert to new innovations from financial institutions. Low returns on standard financial products continue to induce search-for-yield behaviour from investors and households, who are often enticed by new shadow finance products with high returns. This is particularly the case when investors presume the principal value of their investments is implicitly guaranteed by a sponsoring institution. Despite these concerns, authorities have become more comfortable with China's shadow financing system and acknowledged that 'shadow financing is a necessary supplement to the financial market' (Gang 2018).

Monetary authorities have become more targeted in the way that they deploy monetary stimulus in recent years to limit the build-up of financial stability risks, partly by trying to prevent a resurgence in shadow financing activity. This approach has largely continued in response to the COVID-19 pandemic, even though it makes it more difficult to stimulate a broader recovery in economic activity. Regulators have acknowledged that the COVID-19 pandemic and stimulatory credit policy have contributed to increased risk in the financial system and have continued to introduce targeted regulations as new risks emerge (He 2020). However, shadow financing still poses a risk to the system. The stock of shadow financing is equivalent to 40 per cent of GDP and exposures between financial institutions remain complex and opaque by international standards. Risks have also started to materialise in some shadow financing products as

Graph 10
Banks' Capital Adequacy Ratios
Quarterly



authorities try to unwind implicit guarantees. For example, default rates on trust products have risen since 2019. Problems in shadow financing could spill over to the formal system: smaller banks are often directly exposed to shadow financing activity, while larger banks supply funding to smaller banks. In the past, strong economic growth provided a backstop if shadow financing risks were realised – banks could cover losses or rebuild capital through their profits in the formal financial system – but this is less likely to be the case in the future because economic growth is now structurally lower. More generally, lower economic growth, combined with tighter access to finance for some borrowers, is likely to contribute to an increase in non-performing assets across both the formal and informal financial systems.

One of the key challenges for authorities in the near term is to ensure that small banks operate sustainable business models. Authorities have restricted the ability of small banks to raise funds off-balance sheet, while also ensuring that they can't raise deposits above the benchmark rates and directing them to lend to riskier customers at low interest rates. These changes have created a challenging environment for smaller banks and they have been growing more slowly than larger banks.

Consolidation of small banks may be necessary in the longer term.

Conclusion

Chinese authorities have halted and partially reversed the build-up of risk in China's shadow financing system. Overall, this has been a necessary and positive development for China's financial system, although the implications for different parts of the financial system have been mixed.

Households and businesses have fewer investment options that offer attractive returns. Sectors that have relied on shadow finance have had less access to credit, which has probably constrained their activity. Financial intermediaries face more restrictions on the types of funding sources that they can use, and shifts in their asset base have led to a decline in asset quality and a narrowing of profit margins. From the perspective of regulators, it is now easier to monitor and respond to risks than it was a few years ago. However, the trade-off for authorities between reducing risks in the financial system and supporting economic growth has been further heightened by the COVID-19 outbreak.

Appendix A: Peer-to-peer (P2P) lending

P2P lending matches borrowers directly with investors through online marketplaces, known as P2P platforms. A number of factors contributed to the initially strong growth in P2P services and their popularity. Chinese consumers and private businesses that had faced barriers accessing traditional lending services were able to access a new funding source. P2P lending also offered higher yields to Chinese savers than other investment products. Online P2P platforms were able to exploit China's high mobile penetration and use of mobile technology to reach lenders and borrowers. Chinese authorities also initially supported 'internet finance' as a means to improve the efficiency of financial resource allocation.

P2P lending activity grew rapidly between 2014 and 2017 (Graph 11). The ease of establishing a P2P service drove strong growth in the number of privately run platforms initially. This was followed by a period of consolidation as some privately run P2P platforms closed down (many due to fraudulent activity) and P2P platforms with other corporate structures began to increase their activity (Graph 12).

Authorities began establishing a regulatory framework for P2P lending in 2015. The CBRC was given primary responsibility for the oversight of P2P activity and issued the first comprehensive regulatory framework in August 2016. P2P lenders were required to register with regulatory agencies and banned from guaranteeing returns and issuing securities to lenders. Borrowing caps were also set

for individuals and companies. Authorities took further steps following a large rise in P2P platforms facing difficulties in mid 2018, by prohibiting the creation of new P2P platforms and warning both platforms and borrowers of harsh penalties if they avoided their obligations. In November 2019, the CBIRC (which assumed the CBRC's responsibilities) announced it would analyse the remaining P2P platforms: healthy platforms would be encouraged to restructure into more traditional lenders, while less resilient platforms would be directed to close (Yujian *et al* 2019).

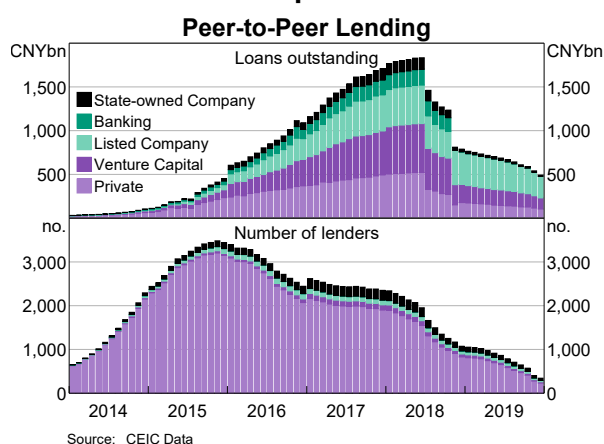
The increase in regulatory oversight and restrictions has seen P2P activity decline consistently since mid 2018. At the end of 2019, only 343 P2P platforms were still active and the value of loans outstanding had fallen below CNY 500 billion. While at their peak P2P loans accounted for 0.85 per cent of bank lending, at the end of 2019 they only accounted for 0.3 per cent.

Factoring

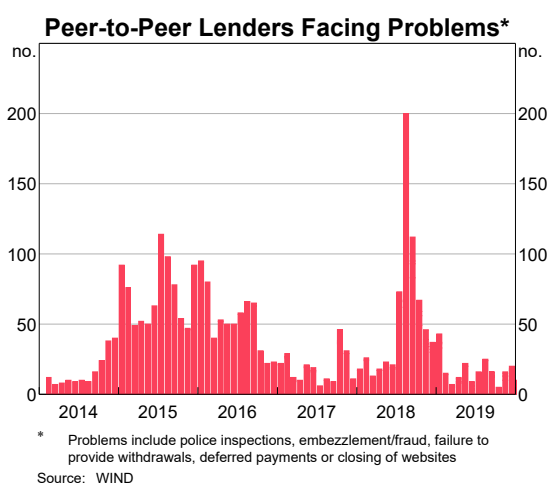
Factoring is a type of supply chain finance where a business sells its accounts receivable to a third party, usually a commercial factoring company, at a discount. Businesses might choose to factor their accounts receivable to meet immediate cash needs, while investors earn a return based on the spread between the receivables' face value and the discounted purchase price.

Factoring is particularly beneficial for China's small and medium-sized enterprises (SMEs), which have

Graph 11



Graph 12



more trouble accessing bank lending. Banks may be more willing to offer SMEs supply chain finance in the form of factoring, because it depends on the credit quality of the accounts receivable rather than the SME (Chen and Liang 2016).

There is a concern among regulators that many of the underlying transactions that are involved in factoring are fraudulent. These concerns have been highlighted by a number of high profile cases (Hong and Wei 2019). In October 2019, the CBIRC

issued a notice that tightened regulation and increased supervision of commercial factoring companies (CBIRC 2019c). The notice included limits on accounts receivables factoring relative to risk assets, increased reporting requirements, imposed tighter restrictions on market access and banned factoring companies from working with P2P lenders. ❖

Footnotes

- [*] Maxwell Sutton is from International Department and Grace Taylor is from the Economic Analysis Department
- [1] The regulators on the committee are the PBC, the China Banking and Insurance Regulatory Commission (CBIRC), the China Securities Regulatory Commission (CSRC), the State Administration of Foreign Exchange (SAFE). The State Council also has a decision-making role.
- [2] The definition of shadow financing used in Graph 1 is similar to the CBIRC's 'narrow' definition (CBIRC 2020). According to the CBIRC's 'broad' definition, shadow financing activity has contracted from around 120 per cent of GDP to 86 per cent of GDP over a similar period. The analysis in the remainder of the article largely focuses on types of shadow financing included in the narrow definition, although there is some discussion of types of financing that are only included in the broad definition.
- [3] For example, in March 2020, banks received a notice from the PBC, which indicated that non-standard deposit products, including structured deposits, fall under the PBC's guidance for market pricing of interest rates (Jizhao 2020). This was followed by changes to the Macro Prudential Assessment Framework in September, where banks could be penalised if the guaranteed return on structured deposits is more than 1.4–1.5 times the benchmark interest rate (Yuan 2020).
- [4] Private firms typically have less access to formal credit than SOEs and have been more reliant on the shadow finance system. There is little incentive for SOEs to use shadow finance because they can generally access cheaper conventional funding sources (Bunny 2020).
- [5] The three red lines are a liability-to-asset ratio over 70 per cent, a net debt-to-equity ratio greater than 100 per cent and a cash-to-short-term-debt ratio less than 100 per cent. Restrictions are placed on developer debt levels depending on the number of red lines that they cross.
- [6] See Appendix A for a discussion of how regulatory reform has affected some alternative intermediaries in China's financial system.
- [7] It is unclear what defines a distressed or risky trust asset.
- [8] Structured deposits make periodic coupon payments depending on the performance of the underlying asset relative to its initial level, but usually have a predetermined trigger level, below which the coupon will not be paid. Investors incur penalties if they wish to access their money before maturity, which is usually between one month and 3 years. It is unclear if structured deposits are covered by the deposit insurance scheme. In some other jurisdictions the principal component of structured deposits is covered by the deposit insurance scheme (e.g. the United States), but in others it is not (e.g. Singapore).
- [9] The first notice was issued in September 2018, which required banks to have the relevant derivatives trading license to conduct structured deposit business and ensured that the regulations applicable to WMPs also applied to structured deposits. Another 2 notices were issued in October 2019 following the rapid growth of structured deposits over 2018. One notice required banks to clearly distinguish between structured deposits and regular deposits, while imposing stricter risk management and accounting requirements on banks (CBIRC 2019b).

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