QE, the collapse of the money multiplier, and the bond multiplier

Kieran Davies, Chief Macro Strategist, Coolabah Capital Investments

This year has seen a sea change in the operation of monetary policy in Australia with the Reserve Bank adopting several unconventional measures that have been part and parcel of its peers' policy toolkits since the global financial crisis. With the cash rate now at the Reserve Bank's self-imposed effective lower bound of 0.1%, the bank's balance sheet – its size, composition and term structure – is now the better measure of the stance of policy because it captures the impact of quantitative easing (QE) and cheap loans to banks made under the Term Funding Facility (TFF).

QE and the TFF should see the Reserve Bank's balance sheet almost triple to about 27% of annual GDP by Q2 2021, with the bank likely to own 20% of the combined Commonwealth and semi-government bond market, which is still relatively small compared to some peers overseas. QE can promote easier financial conditions via several channels, the most important of which is the portfolio balance effect, where a central bank's purchase of bonds is the catalyst for investors to rebalance their portfolios and search for higher-yielding assets, leading to lower bond yields and higher asset prices.

The expansion of the Reserve Bank's balance sheet involves sharply higher exchange settlement (ES) balances, which are the reserves banks hold at the Reserve Bank to settle transactions between themselves, the Reserve Bank, and the Reserve Bank's clients. Some market participants believe in "the money multiplier", which states that this increase in reserves will significantly boost the money supply via the successive lending and redeposit of excess reserves. However, this old-fashioned view does not fit the facts of a modern economy, where money is most often created when a bank creates deposits to write a loan, such that the money multiplier has collapsed both in Australia and abroad.

Instead, it seems likely that there is a bond multiplier from large and growing ES balances, where transactions have almost dried up in the interbank cash market with large balances serving as a buffer for banks' cash needs. Balances no longer earn interest and the loss of bank profits provides an incentive for banks to "recycle" them by either buying Commonwealth and semi-government bonds and/or paying down liabilities. Bernanke called this the "hot potato" effect when discussing QE in the US, where reserves can only be recycled between banks given system-wide interbank cash is fixed by the central bank.

While international research into this effect has been limited, a detailed study of European banks showed banks responded to the European Central Bank's QE-driven surge in reserves by buying domestic government bonds and paying down a range of funding sources. Although we could not replicate this work given the required detailed bank data are not publicly available in Australia, it seems likely to us that the huge increase in ES balances will trigger more active management of reserves by banks, with this recycling effect reinforcing the more well-known portfolio balance channel in placing downward pressure on both Commonwealth and semi-government bond yields. This is likely to be welcomed by the Reserve Bank given its desire to reduce upward pressure on the Australian exchange rate resulting from our globally elevated long-term government bond yields while reducing debt servicing costs for both the Commonwealth and state governments at a time when they are pursuing expansionary fiscal stimulus to reduce labour market slack created by the pandemic.

A sea change in the operation of monetary policy

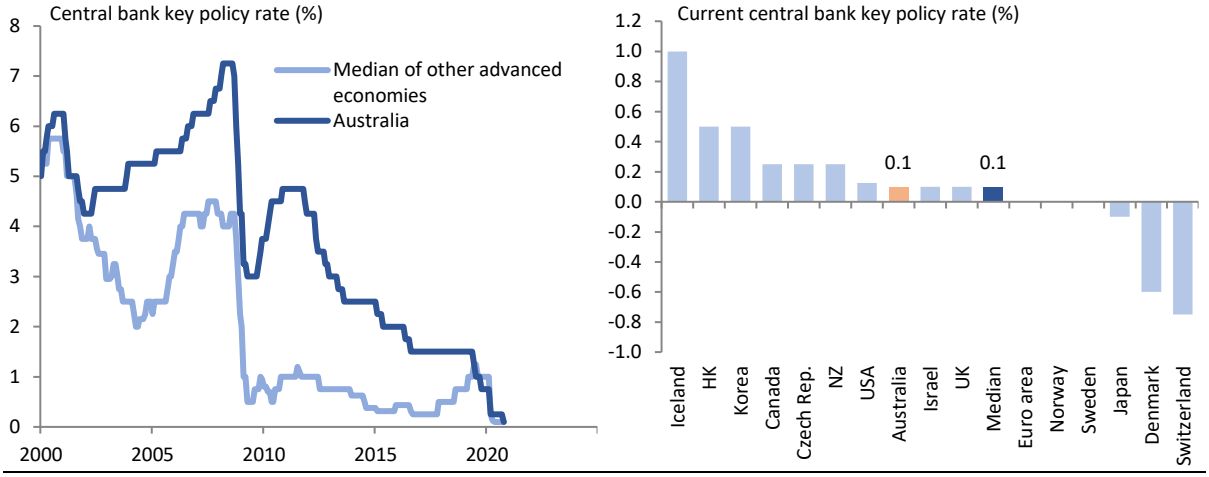
This year has seen a sea change in the operation of monetary policy in Australia. Since 1990, the Reserve Bank has conducted monetary policy by setting a target for the cash rate, which in turn influences the cost of finance through the broader economy. With the cash rate now near zero and Governor Lowe extremely reluctant to adopt negative interest rates, conventional monetary policy has effectively been exhausted and the bank has turned to unconventional monetary policy for the first time since the global financial crisis (GFC).

During the GFC, the Reserve Bank took unconventional steps to restore order to dysfunctional financial markets, which were stopping the transmission of lower interest rates through the economy. In contrast, this year's measures are aimed at the bank's traditional economic objectives. This evolution is remarkable in an Australian context, but other countries had already reached this point several years earlier. Indeed, the adjective "unconventional" is a misnomer, with unconventional policies an essential part of most central bank toolkits for over a decade now.

The measures undertaken by the Reserve Bank in March and November this year included:

1. Cutting the target cash rate to a record low of 0.1%.
2. Lowering the deposit rate on exchange settlements to a record low of zero.
3. Adopting price-based quantitative easing (QE) with a 0.1% target for the 3-year Commonwealth bond yield (supplemented by bond purchases to smooth volatility earlier in the year).
4. Establishing a Term Funding Facility to provide 3-year funding to banks at a 0.1% rate (the facility is currently worth about $200bn).
5. Introducing strong forward guidance that the bank will not increase the cash rate until "actual inflation is sustainably within the 2 to 3% target range", which means the bank does not expect to increase the cash rate for "at least three years".
6. Adopting quantity-based QE of $100bn of purchases of Commonwealth and semi-government bonds over six months (the purchases are in addition to those required to achieve the 3-year bond yield target).

Figure 1: The RBA has been reluctant to follow other countries in cutting the cash rate below zero



Note: Other advanced economies comprise Canada, Czech Republic, Denmark, euro area, Hong Kong, Iceland, Israel, Japan, Korea, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and United States.
Source: Bank for International Settlements, Reserve Bank of Australia, Coolabah Capital

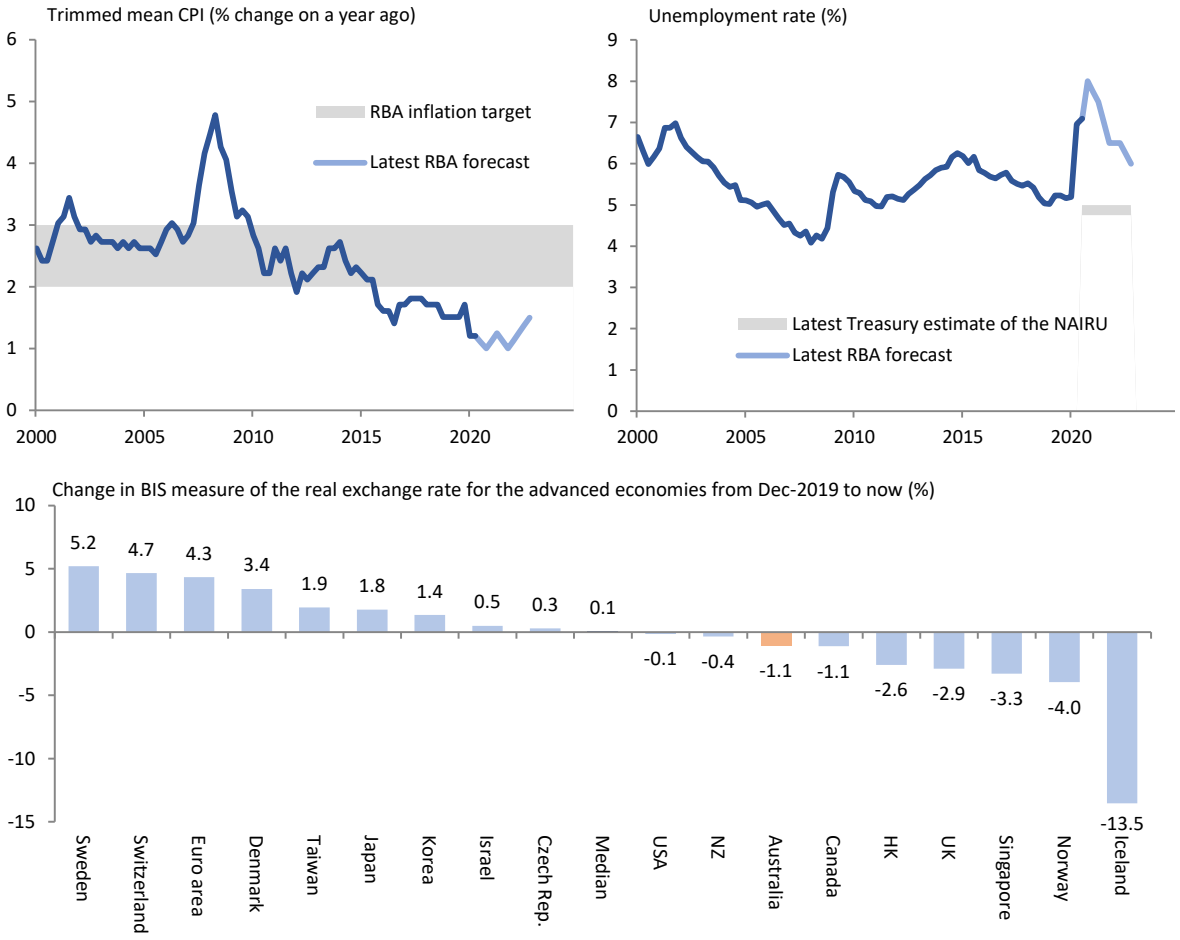
The Reserve Bank is prepared to do more QE depending on the state of the economy

In easing policy in November, the Reserve Bank strongly emphasised it is "prepared to do more if necessary", where:

> *"The focus over the period ahead will be the government bond purchase programme. If the circumstances require, the Board is prepared to do more and undertake additional purchases. At its future meetings, the Board will be closely monitoring the impact of bond purchases on the economy and on market functioning, as well as the evolving recovery from the pandemic, including the outlook for jobs and inflation."*

The Reserve Bank is currently placing more weight on current inflation given the difficulty in forecasting at present, but its updated economic outlook suggests that it is likely to extend its QE programme past its current 6-month span. The Reserve Bank will also be mindful that it may be forced to undertake additional QE to keep pace with other central banks to maintain downward pressure on the exchange rate. For example, the Bank of England recently increased its bond purchases, while the European Central Bank is widely expected to ease policy further in December. Although there is a case that promising results on an effective coronavirus vaccine could possibly buy the Reserve Bank time assuming a successful roll-out next year, community resistance to vaccines and the presence of pervasive third waves around much of the world suggests the global outlook is mixed. Or to borrow from Martin Place's lexicon, the road ahead is likely to remain bumpy and will require ongoing monetary policy support in the form of additional QE to ensure that Australian interest rates are not artificially elevated vis-à-vis the rest of the world.

Figure 2: The Reserve Bank's economic outlook points to the risk of further QE, while it may be forced to ease further to stop the exchange rate appreciating if other central banks ease policy again



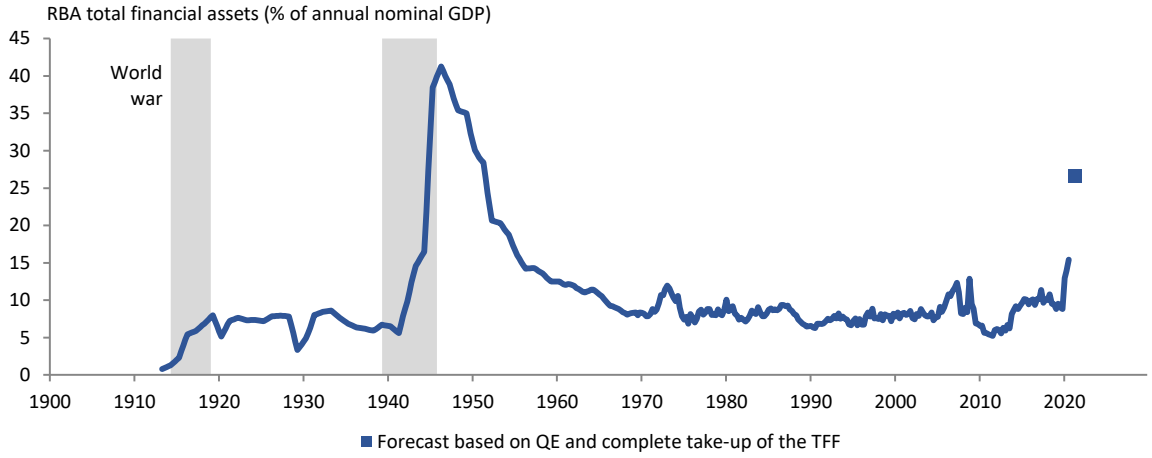
Note: The Reserve Bank forecasts are from the November 2020 Statement on Monetary Policy. The Treasury estimate of the NAIRU is from the Secretary to the Treasury's testimony before the Senate Economics Legislation Committee on 26 October. Real exchange rates for October and November 2020 were approximated using nominal trade-weighted exchange rates.
Source: Australian Bureau of Statistics, Bank for International Settlements, Department of the Treasury, Reserve Bank of Australia, Coolabah Capital

The RBA's balance sheet is now the best measure of the stance of policy

With the cash rate now at the Reserve Bank's self-imposed effective lower bound, the cash rate no longer serves as the best summary measure of the stance of monetary policy. Instead, we think that the size of the Reserve Bank's balance sheet, scaled by GDP, as well as its composition and term structure, are more useful metrics given they capture the impact of its unconventional monetary policies. The Reserve Bank shares this view, as do other central banks that have adopted unconventional policies.

On our calculation, unconventional measures should dramatically increase the size of the Reserve Bank's balance sheet over the next six months. CCI estimates that total assets should increase from about 15% of annual GDP in Q3 to about 27% of GDP in Q2 2021, assuming that other financial assets remain broadly unchanged. This represents a near-tripling of the balance sheet from prior to the coronavirus pandemic when assets stood at 9% of GDP and compares with a 13% peak during the GFC, placing assets at the highest level since the early 1950s when the Reserve Bank was unwinding its funding of the government's military expenses during World War 2.

Figure 3: Further bond purchases and the take-up of the Term Funding Facility will underpin the largest Reserve Bank balance sheet since the early 1950s



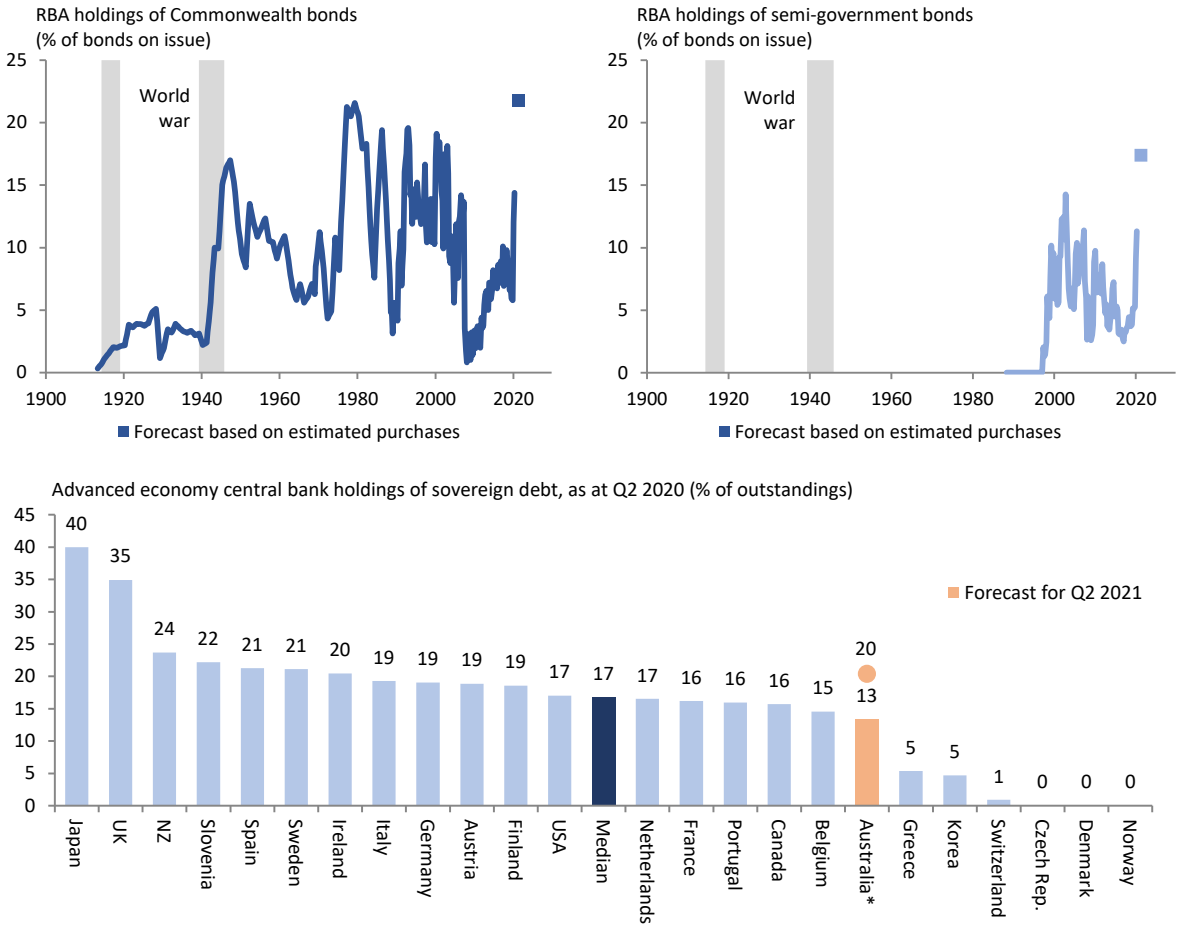
Note: The Commonwealth Bank was the forerunner to the Reserve Bank. Forecast nominal GDP is based on interpolated financial-year estimates from the 2020-21 Commonwealth Budget.
Source: Australian Bureau of Statistics, Department of the Treasury, Reserve Bank of Australia, Coolabah Capital

QE will see record RBA ownership of the bond market, although this will not be particularly high compared with other countries

QE should also see the Reserve Bank hold a record share of the government bond market. CCI calculates that holdings of Commonwealth bonds should increase from 14% of bonds on issue in Q2 2020 to about 22% in Q2 2021, matching the previous peak in 1979. Holdings of semi-government bonds should increase from 11% of outstandings to about 17% over the same period.

Aggregating the two markets to compare with other countries that do not distinguish between national and state debt, the Reserve Bank currently owns 13% of bonds on issue, which is at the low end of international experience, where the median of other advanced economies is 17%. As Reserve Bank holdings increase to about 20% by Q2 2021, this would still not be particularly large by world standards.

Figure 4: QE should see the Reserve Bank hold a record share of the government bond market, although holdings will be not be particularly large by world standards



*Note: The Commonwealth Bank was the forerunner to the Reserve Bank. The pre-1988 estimates for Commonwealth bonds include notes. The Australian Bureau of Statistics treats repurchase agreements as an outright purchase of bonds for the duration of the agreement. The Commonwealth used to issue bonds on behalf of the states prior to the establishment of state central borrowing authorities in the early 1980s. * The sovereign debt estimates cover Commonwealth and semi-government bonds, where the data for other countries include notes and bonds.*
Source: Australian Bureau of Statistics, International Monetary Fund, Reserve Bank of Australia, Coolabah Capital

The portfolio balance sheet effect is the key transmission channel for QE

Focusing on the impact of QE, the experience of other countries suggests it should play a key role in achieving easier financial conditions via:

1. **Policy signalling.** QE reinforces forward guidance of a long period of easy monetary policy by the central bank putting its "money where its mouth is".

2. **Lower bond yields and higher asset prices via portfolio rebalancing.** Buying bonds from investors causes them to rebalance their portfolios away from deposits to higher-yielding assets, which reduces bond yields and term premia. Lower bond yields can drag down the market structure of interest rates, which improves cash flows, and boost other asset prices, such as equity and house prices.

3. **Improved liquidity/reduced risk premia.** Buying bonds can improve market liquidity and reduce risk premia, although high levels of central bank ownership can promote illiquidity.

4. **Improved confidence and reduced uncertainty.** QE can boost confidence and reduce uncertainty by reducing the risk of worse economic outcomes.

5. **Bank lending effect.** Increased deposits improve bank balance sheets and encourage lending. Higher asset prices can improve household/business balance sheets and encourage borrowing.

6. **Downward pressure on the exchange rate.** Lower interest rate differentials and risk premia place downward pressure on the exchange rate.

Most research focuses on the importance of the portfolio balance effect, which we have illustrated using a set of stylised balance sheets. The balance sheets show that with the Reserve Bank's planned purchase of $100bn of government bonds:

- **The balance sheet of the Reserve Bank increases by $100bn.** Total assets increase by $100bn reflecting the purchase of government bonds, while total liabilities increase by the same amount as the Reserve Bank credits bank reserves by $100bn.

- **The balance sheet of banks also increases by $100bn.** Total assets increase by $100bn of bank reserves. Total liabilities simultaneously increase by $100bn as these reserves are credited to the deposit account of investment funds.

- **The balance sheet of investment funds is unchanged in size, but the mix of assets changes.** The composition of assets changes with the sale of $100bn of government bonds and the corresponding increase in bank deposits.

The change in the mix of assets held by investors is the catalyst to them to rebalance their portfolios away from deposits and towards higher-yielding assets.

Figure 5: Stylised balance sheets show how QE boosts the balance sheet of the Reserve Bank and banks and changes the composition of the balance sheet of investors

Before QE						**Immediately after QE**					
RBA	($b)	Banks	($b)	Invest. funds	($b)	RBA	($b)	Banks	($b)	Invest. funds	($b)
Assets		**Assets**		**Assets**		**Assets**		**Assets**		**Assets**	
- govt bonds		- bank reserves		- govt bonds	100	- govt bonds	100 ▲	- bank reserves	100 ▲	- govt bonds	0 ▼
- other assets		- loans		- bank deposits		- other assets		- loans		- bank deposits	100 ▲
TOTAL		TOTAL		TOTAL	100	TOTAL	100 ▲	TOTAL	100 ▲	TOTAL	100
Liabilities		**Liabilities**		**Liabilities**		**Liabilities**		**Liabilities**		**Liabilities**	
- bank reserves		- fund deposits		- liabilities	100	- bank reserves	100 ▲	- fund deposits	100 ▲	- liabilities	100
- other liab.		- h'hold deposits				- other liab.		- h'hold deposits			
TOTAL		TOTAL		TOTAL	100	TOTAL	100 ▲	TOTAL	100 ▲	TOTAL	100

Source: Coolabah Capital

The surge in bank reserves and the collapse of the money multiplier

As the stylised analysis of QE shows, one consequence of the Reserve Bank's purchase of bonds is a deposit-driven increase in the money supply, with the same true when the bank writes loans under the Term Funding Facility (this also means that the money supply will be reduced when QE is eventually unwound and Term Funding Facility loans are repaid). These avenues of money creation echo the most common way money is formed in a modern economy, namely when a commercial bank creates deposits to write a loan or, less often, buy an asset. Similarly, money is destroyed when a bank loan is repaid or a bank sells an asset (money can also be destroyed when a bank issues debt and/or equity liabilities).

Figure 6: Stylised balance sheets show how money is commonly created when a bank writes a loan

Before a loan is written						After a loan is written					
RBA	($b)	Banks	($b)	Households	($b)	RBA	($b)	Banks	($b)	Households	($b)
Assets		**Assets**		**Assets**		**Assets**		**Assets**		**Assets**	
- assets		- home loans		- bank deposits		- assets		- home loans	100 ▲	- bank deposits	100 ▲
TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	100 ▲	TOTAL	100 ▲
Liabilities		**Liabilities**		**Liabilities**		**Liabilities**		**Liabilities**		**Liabilities**	
- bank reserves etc		- h'hold deposits		- home loans		- bank reserves etc		- h'hold deposit	100 ▲	- home loans	100 ▲
TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	100 ▲	TOTAL	100 ▲

Source: Coolabah Capital

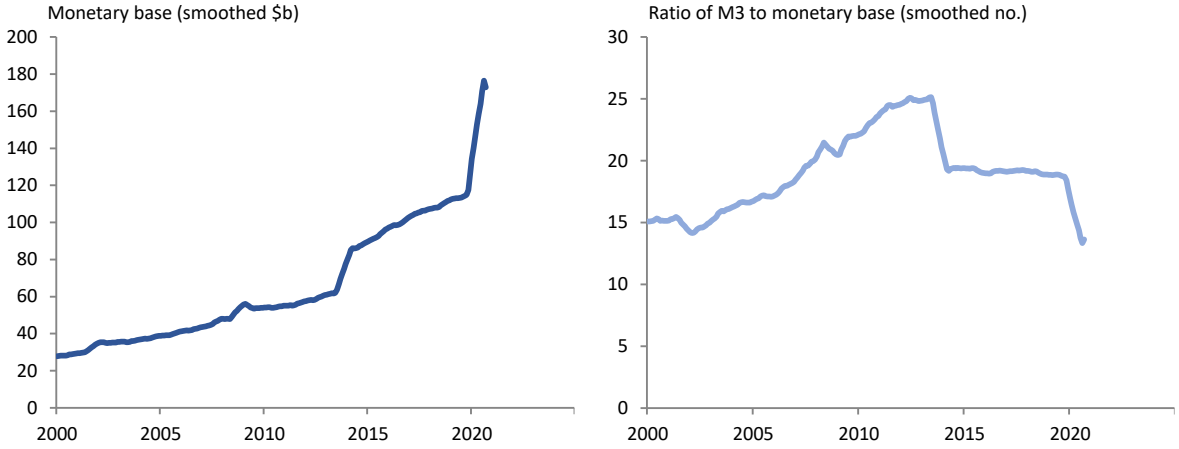
This contrasts with the old-fashioned view of money creation held by some market participants, which relies on the "money multiplier". The multiplier is the ratio of the money supply to the monetary base, where the monetary base comprises physical cash and bank reserves. In this view of the world, the central bank sets reserves in order to determine the level of short-term interest rates. This means that the massive QE/Term Funding Facility-driven increase in bank reserves will depress interest rates and lead to an even larger increase in the money supply (and bank credit). Mechanically, the money multiplier works when an initial increase in reserves underpins a further increase in deposits via the successive lending and redeposit of excess reserves.

Although this view of money creation is intuitively appealing, it does not represent how Reserve Bank and other modern central banks operate. The money multiplier has collapsed across the advanced economies, including Australia, and, like its peers, the Reserve Bank does not focus on bank reserves when setting monetary policy. Instead, the Reserve Bank influences market interest rates via the cash rate, which is adjusted by varying the policy corridor around the target cash rate in the interbank cash market.

The policy corridor comprises the Reserve Bank's ceiling of a lending rate and a floor of a deposit rate and used to be set at the target cash rate +/- 25bp. Now that the target cash rate is 0.1%, the corridor has been tightened to +25bp/-10bp (or 0 to 0.35%) to avoid a negative deposit rate. The corridor determines the transactions that take place in the interbank cash market, where reserves are held in exchange settlement (ES) accounts at the Reserve Bank, with no requirement other than ES balances needing to remain positive. The ES balances represent the "cash" in this market and are used to facilitate cash transactions between banks, the Reserve Bank, and the Reserve Bank's clients, the largest of which is the Commonwealth government. No transactions occur outside the corridor because no bank with a cash shortfall will borrow from another bank at rate higher than the one offered by the Reserve Bank and no bank with excess cash will accept a deposit rate from another bank less than the Reserve Bank's zero floor.

The actual cash rate normally gravitates to the target rate as the Reserve Bank's open market operations ensure supply matches banks' demand for cash within the corridor. The supply curve is vertical because only the Reserve Bank has the legal ability to create cash, with banks distributing this cash by trading between themselves. The cash rate then influences market interest rates, which together with factors such as the regulatory environment and bank assessments of credit risk, determine the ability of banks to write loans and hence increase the money supply.

Figure 7: The textbook measure of the money multiplier has collapsed



Source: Organisation for Economic Co-operation and Development, Reserve Bank of Australia, Coolabah Capital

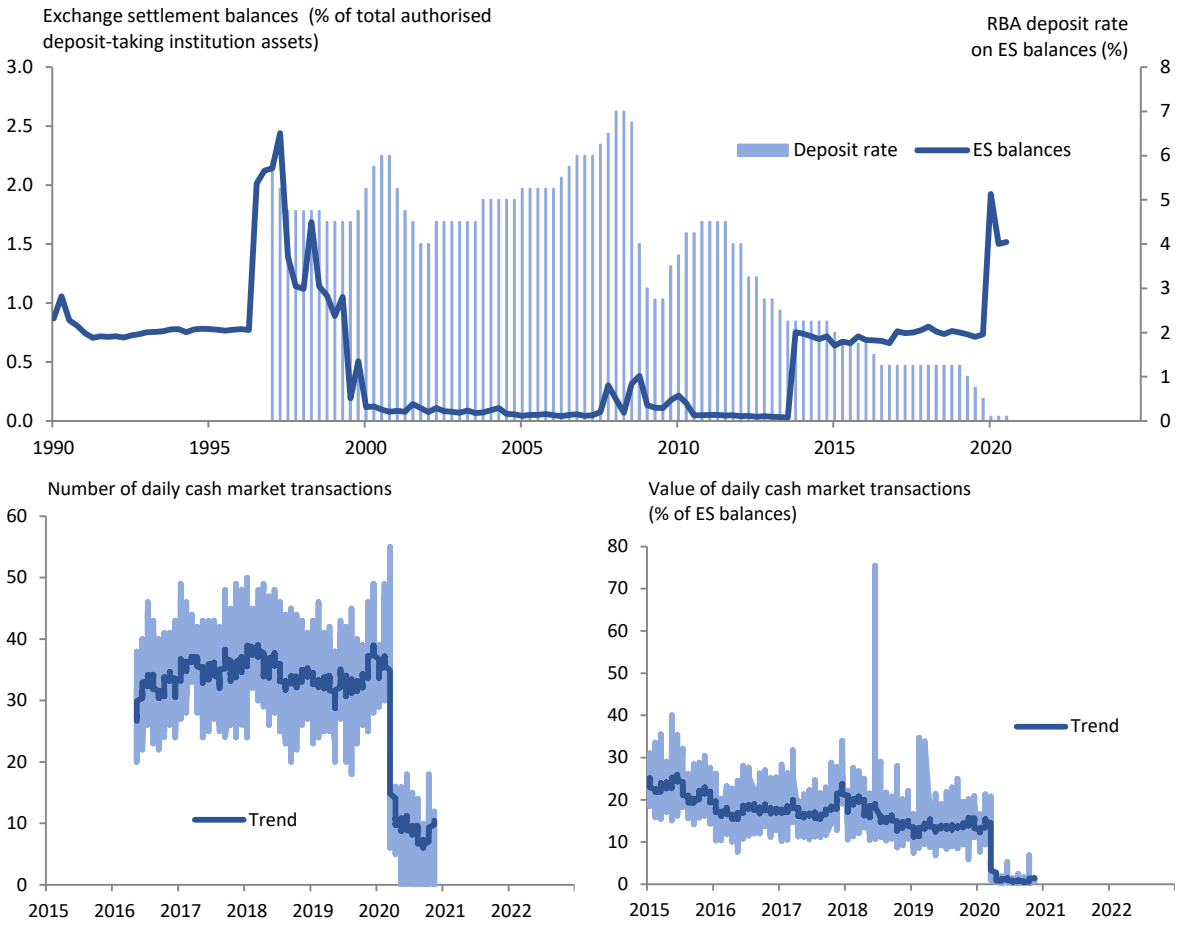
A potential multiplier for bond purchases via the "recycling" of ES balances

Although the money multiplier does not fit with the facts of modern money creation, there is some international evidence of a bond market multiplier with reserves. This is important given the massive increase in ES balances resulting from unconventional policy.

Historically, ES balances were relatively small in size, representing a negligible share of bank assets. ES balances increased to 0.7% of assets in 2013 with reform of the payments system to allow same-day payments, but with unconventional monetary policy have now reached about 1.5-2% of assets. This is the highest share of assets since the policy corridor was introduced in the late 1990s, back when the deposit rate on exchange settlements was 5.75%.

With the deposit rate falling from 0.5% prior to the pandemic to zero, and ES balances potentially rising to near $300bn by Q2 2021, this should reduce annual bank earnings by about $1.5bn (this is about 4% of the $35bn in before-tax profits generated by authorised deposit-taking institutions in 2019-20).

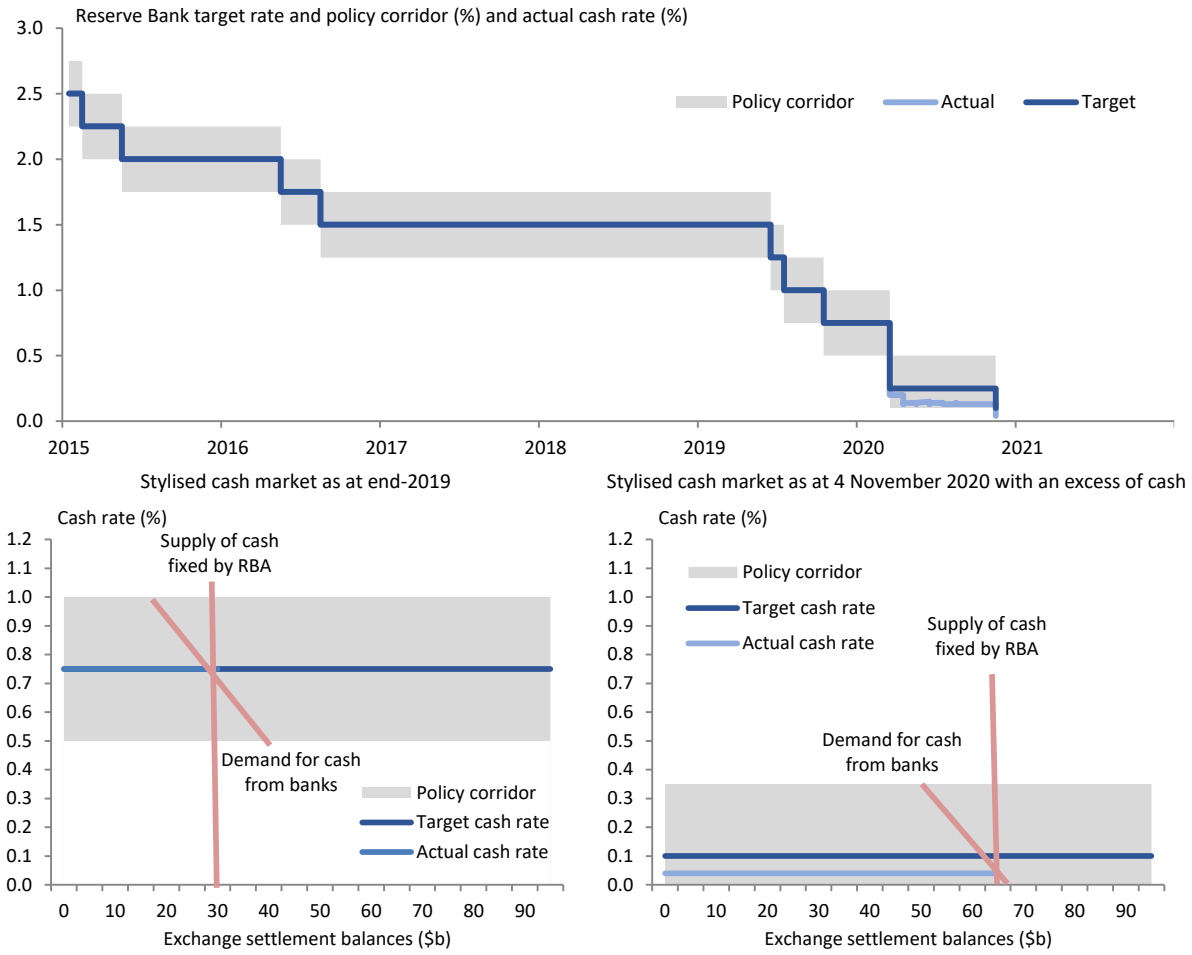
Figure 8: A zero deposit rate and high ES balances should encourage "recycling" of reserves in the interbank cash market



Note: There are some days in 2020 when the Reserve Bank reports "not available" for interbank cash transactions.
Source: Reserve Bank of Australia, Coolabah Capital

This reduction in profits is an incentive for banks to better manage their existing ES balances. This incentive is reinforced by the Reserve Bank not draining an excess of cash in the interbank market, such that the cash rate has consistently traded below the target rate since March. The deep slump in both the number and value of interbank transactions underscores how large balances can absorb cash needs from most banks.

Figure 9: The cash rate has traded below the target rate as the Reserve Bank has not drained excess cash from the market



Source: Reserve Bank of Australia, Coolabah Capital

Large and growing ES balances that no longer earn a return suggest that banks could "recycle" their balances by either buying assets, such as Commonwealth and state government bonds, or reducing bank liabilities, particularly debt subject to the major bank levy of 0.06%. In this way, recycled reserves act as the "hot potato" highlighted by Federal Reserve Chair Ben Bernanke some years ago when US bank reserves were surging as the Fed undertook QE.[1] Such recycling simply reallocates the system-wide amount of interbank cash determined by the Reserve Bank, although, as discussed earlier, asset purchases still boost the money supply. This is seen using stylised balance sheets to demonstrate the impact of a bank buying government bonds from an investment fund that has deposits at another bank. The first bank buys the bonds using its ES balances to credit the deposit account at the second

[1] ***"US Senator Sanders.*** *… [Banks have] increased the amount of excess reserves held at the Fed from $US1.5 billion [in 2007] to more than $US1.7 trillion [in 2013 because] … the Fed … [pays] interest to … keep this money at the Fed. … [It] would be much more productive … if that money was out going to … [the] economy, rather than sitting at the Fed. …*
Fed Chairman Bernanke. *… [T]he amount of excess reserves in the banking system is completely out of the control of the banks. The Fed puts those reserves in the system. The banks can pass them around from each other, but the total is just given. They can't do anything about that. It's like a hot potato …"*

Transcript of the Hearing on the Economic Outlook before the Joint Economic Committee, 22 May 2013

bank. The second bank's ES balances increase, but total ES balances are unchanged as all that has happened is that reserves have been passed from the first bank to the second bank.

Figure 10: A bank buying bonds with its ES balances does not alter system-wide interbank cash

Before "Bank #1" recycles its ES balances

RBA	($b)	Bank #1	($b)	Bank #2	($b)	Investment fund	($b)
Assets		**Assets**		**Assets**		**Assets**	
- assets	200	- govt bonds	0	- govt bonds	0	- govt bonds	100
		- ES balances #1	100	- ES balances #2	100	- inv. fund deposit	0
TOTAL	200	TOTAL	100	TOTAL	100	TOTAL	100
Liabilities		**Liabilities**		**Liabilities**		**Liabilities**	
- ES balances #1	100	- deposits	100	- inv. fund deposit	0	- liabilities	100
- ES balances #2	100			- other deposits	100		
- other							
TOTAL	200	TOTAL	100	TOTAL	100	TOTAL	100

Bank #1 buys government bonds from an investment fund

RBA	($b)	Bank #1	($b)	Bank #2	($b)	Investment fund	($b)
Assets		**Assets**		**Assets**		**Assets**	
- assets	200	- govt bonds	100 ▲	- govt bonds	0	- govt bonds	0 ▼
		- ES balances #1	0 ▼	- ES balances #2	200 ▲	- inv. fund deposit	100 ▲
TOTAL	200	TOTAL	100	TOTAL	200 ▲	TOTAL	100
Liabilities		**Liabilities**		**Liabilities**		**Liabilities**	
- ES balances #1	0 ▼	- deposits	100	- inv. fund deposit	100 ▲	- liabilities	100
- ES balances #2	200 ▲			- other deposits	100		
- other							
TOTAL	200	TOTAL	100	TOTAL	200 ▲	TOTAL	100

Source: Coolabah Capital

International research suggests that a bond multiplier from "recycling" reserves likely exists in Australia

Unfortunately, there are not many studies of the interaction between QE and central bank reserves, as most work focuses on the portfolio balance and signalling channels of large-scale asset purchases. Two studies that have focused on this issue are:

- Ryan and Whelan (2019), which examined monthly balance-sheet data for individual European banks to gauge the impact of the European Central Bank's QE programme from 2015 to 2018. They found reserves as a share of assets were widely dispersed across banks and countries, with large reserves among banks with large deposit bases and smaller foreign-owned banks that were less active in managing their reserves. Like Australia, the QE-driven surge in reserves had seen a collapse in interbank cash transactions. The analysis suggested that banks reduced large reserves by buying domestic government bonds and paying down a range of funding sources. Most of the yield curve was negative at the time, suggesting that banks were either buying bonds with less negative yields than the prevailing negative deposit rate or buying long-term bonds with a positive yield (the deposit rate on reserves ranged between -0.2 and -0.4% over this period).

- Christensen and Kogstrup (2016), which examined bank reserves in an event study of the Swiss National Bank's unconventional policy in 2011. The Swiss National Bank significantly increased reserves to counter an appreciation of the Swiss Franc by lowering short-term interest rates through purchases of short-term debt, repurchase agreements and short-term foreign exchange swaps. Even though the bank did not buy long-term bonds, long-term bond yields fell sharply. This analysis suggested the drop in long-term bond yields was mostly due to reserve-induced portfolio effects, with some role for the signalling channel of unconventional policy. The researchers acknowledged that their approach would not work when a central bank increased reserves by buying long-term bonds because their model could not separate a reserve effect from the usual portfolio balance channel. Nonetheless, they pointed to the experience of the US, where the

simultaneous large increase in reserves and bank holdings of bonds during the Federal Reserve's QE suggested that a reserve effect was also at play (see Ennis and Wolman (2015)).

In judging the applicability of this work to Australia, we are mindful of the differences with Europe. For example, the Eurosystem has a vastly larger number of banks, with the first study examining data for about 170-190 banks over four years, while some of the reported models had low R-bar-squareds, which is not surprising considering the likely omission of variables that also influence bank behaviour. Ideally, we would have liked to replicate some of this work, but the Reserve Bank has advised that it is unable to release anonymised data on bank exchange balances for confidentiality reasons. Nonetheless, given the scale of the increase in ES balances, both to date and in prospect, we think it likely that banks in Australia will seek to manage high reserves and this recycling is likely to involve buying Commonwealth and semi-government bonds and paying down debt. However, the effect will be combined with the traditional portfolio balance impact on bond yields such that it cannot be quantified with publicly-available data on the cash market and bank balance sheets.

Investment Disclaimer

Past performance does not assure future returns. All investments carry risks, including that the value of investments may vary, future returns may differ from past returns, and that your capital is not guaranteed. This information has been prepared by Coolabah Capital Investments Pty Ltd (ACN 153 327 872). It is general information only and is not intended to provide you with financial advice. You should not rely on any information herein in making any investment decisions. To the extent permitted by law, no liability is accepted for any loss or damage as a result of any reliance on this information. The Product Disclosure Statement (PDS) for the funds should be considered before deciding whether to acquire or hold units in it. A PDS for these products can be obtained by visiting www.coolabahcapital.com. Neither Coolabah Capital Investments Pty Ltd, Equity Trustees Ltd (ACN 004 031 298) nor their respective shareholders, directors and associated businesses assume any liability to investors in connection with any investment in the funds, or guarantees the performance of any obligations to investors, the performance of the funds or any particular rate of return. The repayment of capital is not guaranteed. Investments in the funds are not deposits or liabilities of any of the above-mentioned parties, nor of any Authorised Deposit-taking Institution. The funds are subject to investment risks, which could include delays in repayment and/or loss of income and capital invested. Past performance is not an indicator of nor assures any future returns or risks. Coolabah Capital Investments (Retail) Pty Limited (CCIR) (ACN 153 555 867) is an authorised representative (#000414337) of Coolabah Capital Institutional Investments Pty Ltd (CCII) (AFSL 482238). Both CCIR and CCII are wholly owned subsidiaries of Coolabah Capital Investments Pty Ltd. Equity Trustees Ltd (AFSL 240975) is the Responsible Entity for these funds. Equity Trustees Ltd is a subsidiary of EQT Holdings Limited (ACN 607 797 615), a publicly listed company on the Australian Securities Exchange (ASX: EQT).

Forward-Looking Disclaimer

This presentation contains some forward-looking information. These statements are not guarantees of future performance and undue reliance should not be placed on them. Such forward-looking statements necessarily involve known and unknown risks and uncertainties, which may cause actual performance and financial results in future periods to differ materially from any projections of future performance or result expressed or implied by such forward-looking statements. Although forward-looking statements contained in this presentation are based upon what Coolabah Capital Investments Pty Ltd believes are reasonable assumptions, there can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Coolabah Capital Investments Pty Ltd undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws. The reader is cautioned not to place undue reliance on forward-looking statements.