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

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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)

	Primary Purpose(s)		
Tool	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

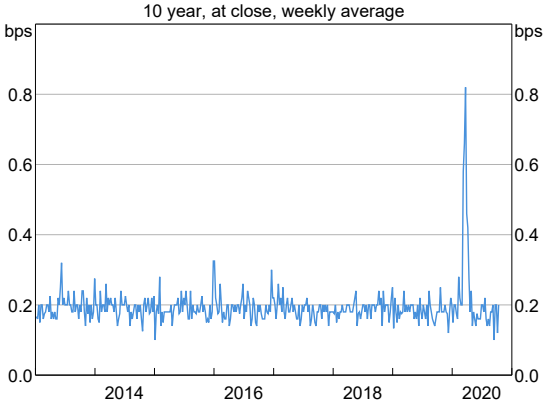
Central banks undertook asset purchases to promote market liquidity and market functioning in a way that bypassed financial intermediaries. These asset purchase programs were very large, and in many cases were uncapped. Reflecting the scale of the dysfunction, the pace of purchases far exceeded what 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

US Treasury Bid-ask Spread

10 year, at close, weekly average

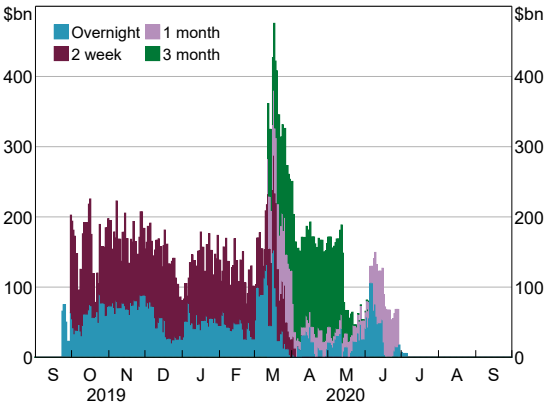


Source: Refinitiv

Graph 2

Outstanding Repurchase Operations

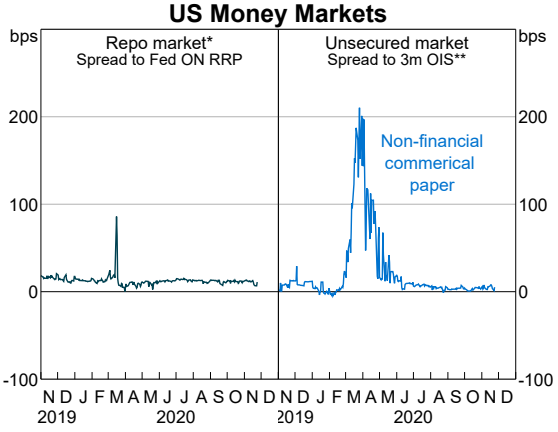
US Federal Reserve



Source: Federal Reserve Bank of New York

Graph 3

US Money Markets



* General collateral overnight repo; spread to Fed's overnight reverse repo program (ON RRP)

** Overnight indexed swaps

Sources: Bloomberg; Refinitiv

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.

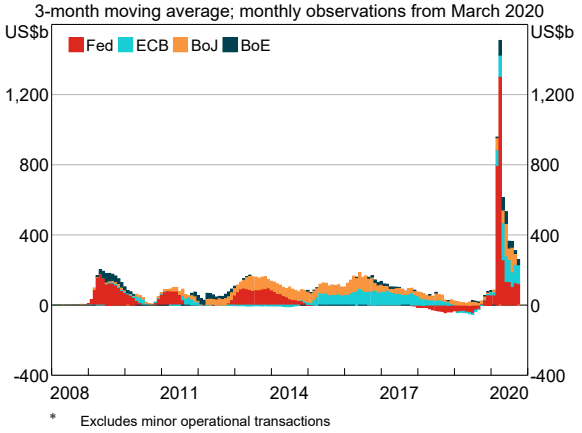
Stressed conditions were more evident in the market for foreign exchange swaps. These markets are an important source of US dollar funding for many non-US financial institutions.[7] Strains in these markets were evident in the sharp increase in the cost of borrowing US dollars in exchange for other currencies (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*

3-month moving average; monthly observations from March 2020



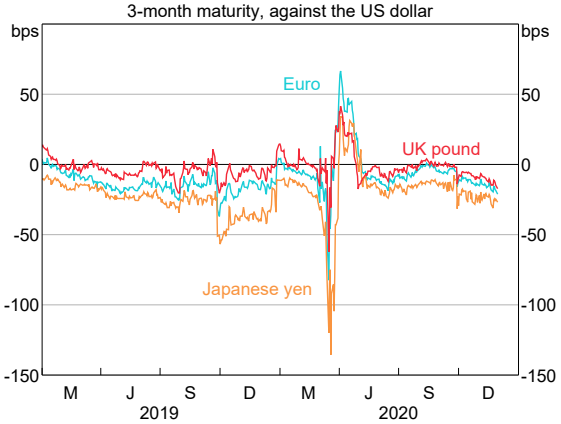
* Excludes minor operational transactions

Sources: Bloomberg; Central banks; RBA; Refinitiv

Graph 5

Cross-currency Basis

3-month maturity, against the US dollar



Source: Bloomberg

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]

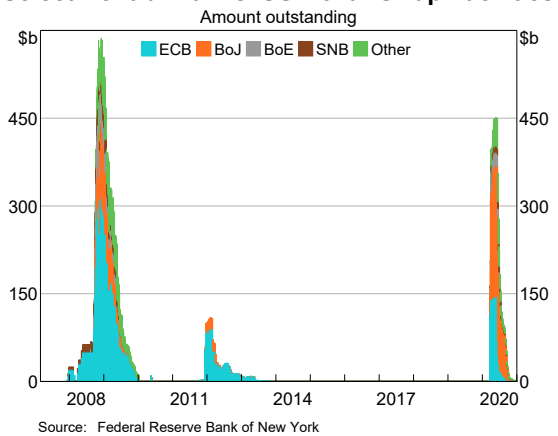
In many cases, the reductions in policy rates resulted in lower interest rates on lending facilities offered by central banks (see above). This was an important channel through which lower policy rates translated into lower interest rates in the economy, particularly during the peak of the crisis when 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

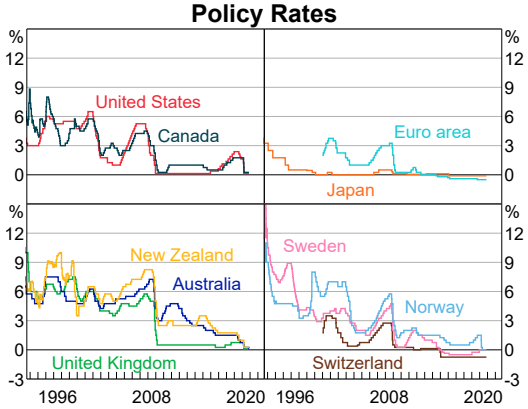
Select Central Banks' US Dollar Swap Facilities



Source: Federal Reserve Bank of New York

Graph 7

Policy Rates



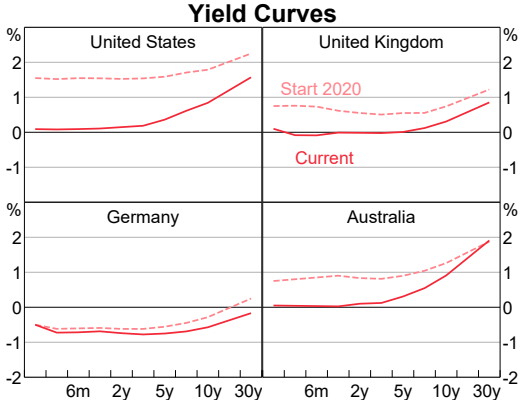
Sources: RBA; Refinitiv

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.

Graph 8

Yield Curves

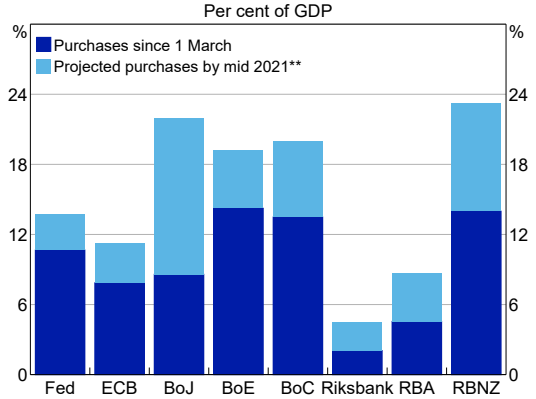


Sources: RBA; Refinitiv

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

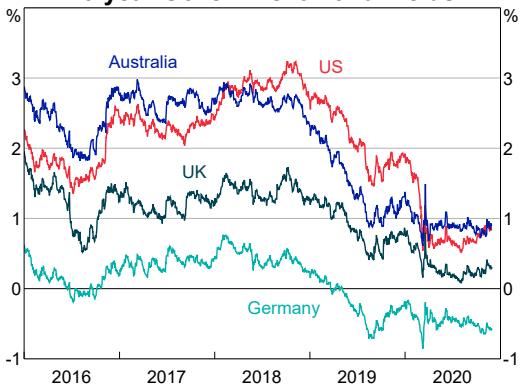
Some central banks have weighted purchases towards particular maturities and market segments to influence the spreads between different interest rates. For example, the European Central Bank initially weighted its pandemic-related government bond purchases more heavily towards Italian and Spanish government 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 10

10-year Government Bond Yields



Source: Bloomberg

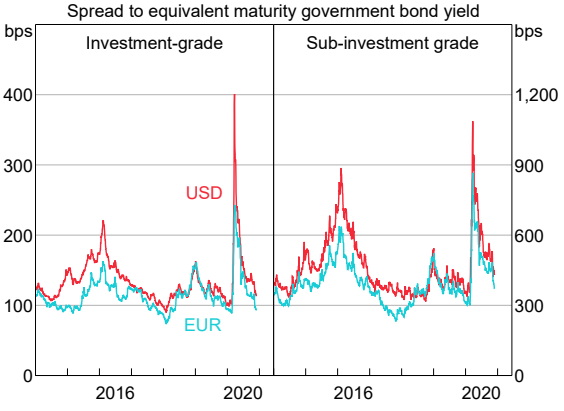
actual purchases did not take place until more than 2 months after the announcements and usage remains low (Graph 12).

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.

Graph 11

Corporate Bond Spreads

Spread to equivalent maturity government bond yield

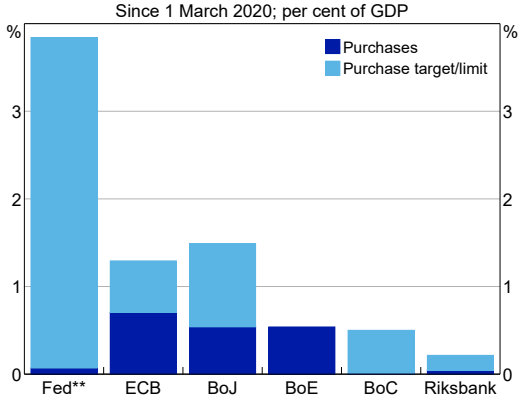


Source: ICE Data is used with permission

Graph 12

Corporate Bond Purchases*

Since 1 March 2020; per cent of GDP



* The Swiss National Bank, Norges Bank, Reserve Bank of New Zealand and Reserve Bank of Australia have not purchased corporate bonds in response to COVID-19

** Includes purchases of corporate bond ETFs

Sources: Central banks; RBA; Refinitiv

Term funding schemes

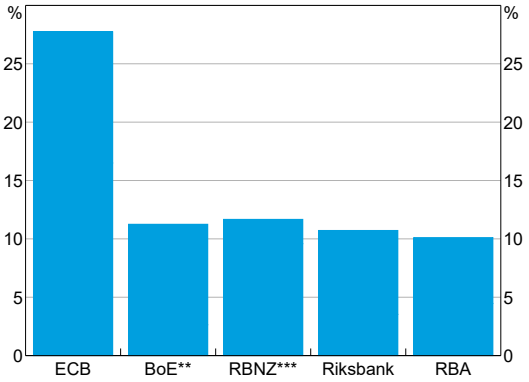
Many central banks have supported bank lending by expanding or launching new term funding schemes (Graph 13).[17] These schemes aim to lower longer-term funding costs for banks and in turn reduce interest rates for borrowers. This was particularly important during the pandemic, because bank lending rates 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 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 McCririck 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 that they are often unwilling or unable to lower their deposit rates below zero.

[19] See Lowe (2020).

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