

CEPR PRESS



Edited by Bill English, Kristin Forbes
and Angel Ubide

Monetary Policy and Central Banking in the Covid Era

CENTRE FOR
ECONOMIC
POLICY
RESEARCH

ICMB INTERNATIONAL CENTER
FOR MONETARY
AND BANKING STUDIES
CIMB CENTRE INTERNATIONAL
D'ETUDES MONETAIRES
ET BANCAIRES

Monetary Policy and Central Banking in the Covid Era

CEPR PRESS

Centre for Economic Policy Research

33 Great Sutton Street

London, EC1V 0DX

UK

Tel: +44 (0)20 7183 8801

Email: cepr@cepr.org

Web: www.cepr.org

ISBN: 978-1-912179-44-2

Copyright © CEPR Press, 2021.

Monetary Policy and Central Banking in the Covid Era

Edited by Bill English, Kristin Forbes
and Angel Ubide

**CENTRE FOR
ECONOMIC
POLICY
RESEARCH**

ICMB INTERNATIONAL CENTER
FOR MONETARY
AND BANKING STUDIES
CIMB CENTRE INTERNATIONAL
D'ETUDES MONETAIRES
ET BANCAIRES

CENTRE FOR ECONOMIC POLICY RESEARCH (CEPR)

The Centre for Economic Policy Research (CEPR) is a network of over 1,500 research economists based mostly in European universities. The Centre's goal is twofold: to promote world-class research, and to get the policy-relevant results into the hands of key decision-makers.

CEPR's guiding principle is 'Research excellence with policy relevance'.

A registered charity since it was founded in 1983, CEPR is independent of all public and private interest groups. It takes no institutional stand on economic policy matters and its core funding comes from its Institutional Members and sales of publications. Because it draws on such a large network of researchers, its output reflects a broad spectrum of individual viewpoints as well as perspectives drawn from civil society.

CEPR research may include views on policy, but the Trustees of the Centre do not give prior review to its publications. The opinions expressed in this report are those of the authors and not those of CEPR.

Chair of the Board	Sir Charlie Bean
Founder and Honorary President	Richard Portes
President	Beatrice Weder di Mauro
Vice Presidents	Maristella Botticini
	Ugo Panizza
	Philippe Martin
	Hélène Rey
Chief Executive Officer	Tessa Ogden

THE INTERNATIONAL CENTER FOR MONETARY AND BANKING STUDIES (ICMB)

The International Center for Monetary and Banking Studies (ICMB) was created in 1973 as an independent, non-profit foundation. It is associated with Geneva's Graduate Institute of International and Development Studies. Its aim is to foster exchanges of views between the financial sector, central banks and academics on issues of common interest. It is financed through grants from banks, financial institutions and central banks. The Center sponsors international conferences, public lectures, original research and publications. In association with CEPR, the Center has published the Geneva Reports on the World Economy since 1999. These reports attract considerable interest among practitioners, policymakers and scholars.

ICMB is non-partisan and does not take any view on policy. Its publications, including the present report, reflect the opinions of the authors, not of ICMB or any of its sponsoring institutions. The President of the Foundation Board is Jaime Caruana and the Director is Ugo Panizza.

Contents

<i>Foreword</i>	<i>vii</i>
Part I: Introduction, overview, and economic background	
Monetary policy and central banking in the Covid era: Key insights and challenges for the future	3
Bill English, Kristin Forbes and Angel Ubide	
A year like no other	27
Gian Maria Milesi Ferretti	
Part II: The central bank responses in advanced economies	
Monetary policy in Australia during Covid	45
Guy Debelle	
The Bank of Canada's response in 2020 to the Covid-19 pandemic	61
Toni Gravelle and Carolyn A. Wilkins	
The monetary policy response in the euro area	81
Philip R. Lane	
The Bank of Japan's monetary policy in the time of Covid-19	93
Masayoshi Amamiya	
The response in Sweden	103
Per Jansson	
The Swiss National Bank's monetary policy response to the Covid-19 pandemic	123
Thomas J. Jordan	
The Bank of England's response to Covid-19	137
Ben Broadbent	
The COVID-19 crisis and the Federal Reserve's policy response	147
Richard H. Clarida, Burcu Duygan-Bump and Chiara Scotti	
Part III: The central bank responses in emerging economies	
Brazil: Covid-19 and the road to recovery	175
Fernanda Nechio and Bruno Serra Fernandes	
The Central Bank of Chile's policy response to the Covid-19 crisis	193
Pablo García Silva	

The People's Bank of China adhered to normal monetary policy and enhanced support to the real economy to offset the impact of Covid-19	213
Sun Guofeng	
The response of the Reserve Bank of India to Covid-19: Do whatever it takes	227
Rakesh Mohan	
Bank Indonesia's response to Covid-19: Synergise to build optimism for economic recovery	255
Perry Warjiyo	
Bank of Russia policy during the Covid-19 pandemic	271
Ksenia Yudaeva	
Weathering Covid: South Africa's central bank policy in 2020 and 2021	281
Christopher Loewald	
Monetary policy in the Covid era: The Turkish experience	293
Hakan Kara	
Part IV: Evaluation of the responses and implications for the future	
Central banks and the Covid-19 economic crisis	313
Claudio Borio	
Assessment of monetary and financial policy responses in advanced economies to the Covid-19 crisis	325
Laurence Boone and Łukasz Rawdanowicz	
The year the power of central bank balance sheets was unleashed	341
Athanasios Orphanides	
Emerging markets during Covid-19: Unconventional policies and financial markets	357
Dimitris Drakopoulos, Rohit Goel, Evan Papageorgiou, Dmitri Petrov, Patrick Schneider and Can Sever	
Central banking and credit provision in emerging market economies during the Covid-19 crisis	371
Luis Felipe Céspedes and José De Gregorio	
A global shock to a global system: Covid-19 and the post-2008 regulatory framework	389
Dietrich Domanski	
Macroprudential bank capital actions in response to the 2020 pandemic	405
Rochelle M. Edge and J. Nellie Liang	
Looking forward: Monetary policy post-Covid	417
Olivier Blanchard	

Foreword

The Covid 19 pandemic led to a global macroeconomic shock of unprecedented magnitude. Besides a death toll that, at the time of writing has surpassed 3.3 million, the pandemic led to the worst peacetime decline in economic activity since the Great Depression.

Central banks reacted quickly, outpacing their responses to the 2007-2009 global financial crisis in terms of both speed and scope. Central banks in advanced economies deployed a vast range of tools aimed at guaranteeing that the private sector had continuous access to credit and also cooperated with fiscal authorities with the objective of limiting the costs of the fiscal response to the crisis. Central banks in some emerging economies were also able to adopt expansionary policies and deployed asset purchases without serious consequences in terms of inflation.

This volume, edited by Bill English, Kristin Forbes and Angel Ubide, provides a timely analysis of how central banks around the world responded to the shock. It is part of CEPR's and ICMB's long-standing cooperation in the production and dissemination of innovative analysis on important topical issues facing the global economy.

After an introduction by the editors, the volume starts with a summary of the macroeconomic impact of the pandemic by Gian Maria-Milesi Ferretti who, having led the International Monetary Fund's World Economic Outlook for more than a decade, observed the crisis from a privileged vantage point. This chapter sets the stage by highlighting how "2020 was a year like no other."

The second and third parts of the volume provide a unique view from the trenches, with senior central bankers from eight advanced economies and eight emerging markets providing details on how their institutions reacted to the pandemic.

The fourth part of the book includes evaluations of these policies from the points of view of international policymakers at the Bank for International Settlements, the Financial Stability Board, the IMF and the OECD. It also provides perspectives from observers with a deep knowledge of policymaking in Europe and Latin America as well as experts in financial supervision and regulation. The book concludes with an overall assessment by Olivier Blanchard.

Blanchard explores a scenario in which equilibrium nominal rates become higher and the zero lower bound constraint becomes less relevant. He concludes that the global financial crisis and the covid pandemic taught us a lot about what monetary policy can do, but that there is more work to do.

CEPR and ICMB are very grateful to the editors and the authors for their efforts in preparing material for this eBook. We also thank Anil Shamdasani for his unstinting and patient work in publishing the report.

CEPR and ICMB, which take no institutional positions on economic policy matters, are delighted to provide a platform for an exchange of views on this topic.

Tessa Ogden
Chief Executive Officer, CEPR

Ugo Panizza
Director, ICMB

PART I

INTRODUCTION, OVERVIEW, AND ECONOMIC BACKGROUND

Monetary policy and central banking in the Covid era: Key insights and challenges for the future

Bill English, Kristin Forbes and Angel Ubide¹

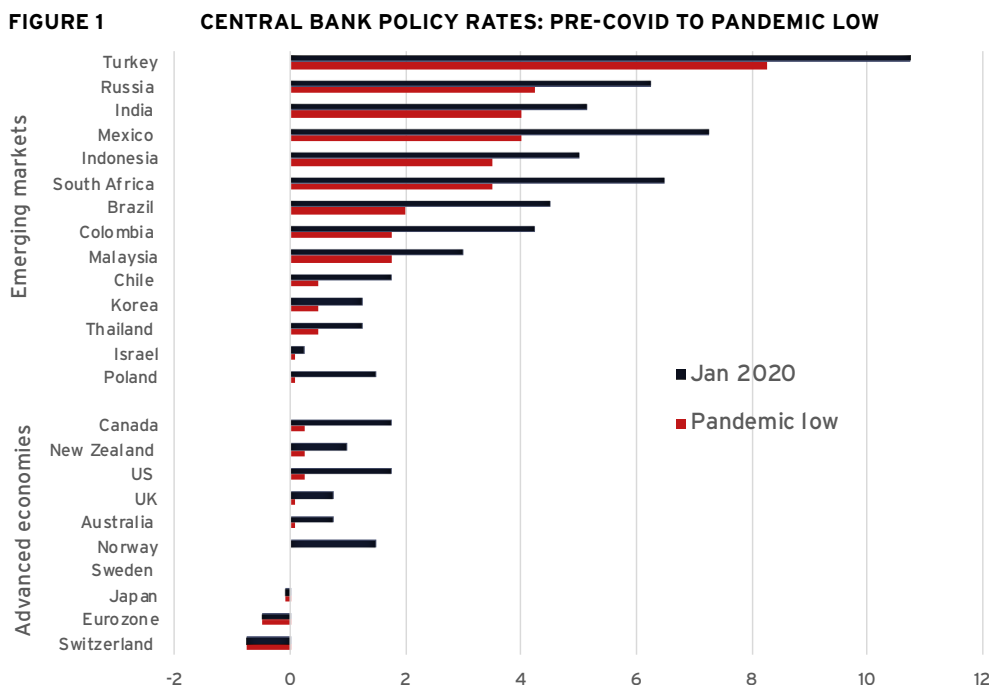
Yale School of Management; MIT-Sloan School of Management and CEPR; Citadel

With many economies still struggling to boost inflation a decade after the Global Financial Crisis (GFC), central banks were suddenly confronted with the challenge of responding to the Covid shock in early 2020. The abruptness and speed of the economic deterioration, the sharp increase in market volatility, and the blinding uncertainty about the impact of the pandemic in an environment of already low inflation motivated a central bank reaction that was unprecedented in terms of its speed, scope, and size. This was not a standard recession, triggered by overheating or financial excesses; it was akin to an induced economic coma. A different recession required a different response.

Short-term rates, which were already low in most advanced economies, quickly fell to around zero in all advanced economies (Figure 1). Emerging markets also experienced sharp declines in short-term rates, approaching zero in several countries (such as Chile, Poland, Israel and Korea). Central banks were faced with the challenge of supporting real economies and stabilising financial markets through tools other than reductions in their main policy rates. Although there was widespread agreement that fiscal policy and health policy would play the lead role in fighting the pandemic and generating a recovery, monetary policy still had a critical role to play as markets froze, capital flows to emerging markets collapsed, and economic activity came to a halt. Central banks quickly turned to the measures adopted during the GFC. They revived tools and facilities that had previously been developed, and then expanded on them and introduced an entirely new set of programmes to support additional segments of the economy.

This volume gathers the responses of sixteen central banks to the Covid shock, including those in eight major advanced economies (AEs) and in eight emerging market economies (EMs). It discusses the range of actions taken, the lessons learned, and the unresolved questions raised by this expansion of the central bank toolkit. While the specific actions by each central bank were logically determined by the idiosyncrasies of their economies and institutions, there are several common threads. This introductory chapter ties together these themes and draws out some implications for the future conduct of monetary policy.

¹ The views or opinions expressed in this book are solely those of the authors and do not reflect the views, policies, or positions of Citadel.



Source: Bloomberg.

Note: Emerging market central banks are categorised based on the Bank for International Settlements' definitions of "Developed" and "Emerging/Developing."

WHAT DID CENTRAL BANKS DO?

The Covid shock presented a problem that had never been faced before: a global sudden stop of economic activity caused by a pandemic. It was an environment of Knightian uncertainty that made forecasting growth and inflation extremely challenging. Indeed, a few central banks, such as the Federal Reserve, the Bank of Canada (BoC) and the Bank of England (BoE), did not provide their usual forecasts in the initial phase of the pandemic because of this outsized uncertainty. In addition, financial markets reacted sharply and violently to the shock, with a 'dash for cash' that generated dislocations even in the most liquid market of all – the US Treasury market. These market distortions raised concerns that the channels through which monetary policy usually worked might not function as expected.

In response, central banks acted quickly and aggressively, deploying a range of tools in a multidimensional strategy to address overlapping challenges. These tools can be roughly divided into four categories:

- First, *rate cuts and forward guidance* to ease strains in markets as well as support aggregate demand and help economies to rebound.

- Second, *asset purchases* to address widespread dysfunction in key financial markets and, later, to provide additional support for aggregate demand.
- Third, *liquidity provision and credit support* (lending to financial firms, purchases of corporate securities, direct lending to nonfinancial firms, and ‘funding for lending’-type programmes to support bank lending), often done in conjunction with governments, to support the provision of credit to businesses to ensure that viable firms could survive the crisis and be able to ramp up production and support employment once the crisis ebbed.
- Finally, and closely related, *regulatory easing*, such as reductions in the countercyclical capital buffer (CCyB) and other reductions in requirements for liquidity and capital buffers, to ensure banks would not amplify the contraction in credit and liquidity to meet regulatory standards.

Table 1 summarises the tools used by each of the central banks included in this book.²

The table shows that most central banks used a range of tools covering each of these four broad categories. Monetary policy – what used to be the primary focus of central banks – was only a small part of the response. Conceptually, this wide-ranging response to Covid ended the arbitrary distinction between ‘conventional’ and ‘unconventional’ policies. Cutting rates to zero or negative, using forward guidance, buying assets, and more generous lending programmes (at concessional rates and/or at longer than overnight maturities, sometimes with special conditions) are now all common tools of monetary policy. Even if many of these programmes are unwound as economies recover, central banks will be operating over the coming years with much larger balance sheets and a wider range of exposures. Even emerging markets, which had previously relied mostly on adjustments to policy rates and FX intervention, began to use asset purchases and other ‘new tools’ without generating a negative market reaction.

This multifaceted policy reaction benefited from the extensive research and work done in response to the GFC, and particularly the infrastructure already developed and in place. For example, the still existing long-term lending facilities at the European Central Bank (ECB) and the Bank of Japan (BoJ) kept banking systems stable, and the existing network of FX swaps from the Federal Reserve, ECB, and People’s Bank of China (PBOC) contributed greatly to keeping tensions in global funding markets manageable.

2 Thanks to Rochelle Edge and Nellie Liang for providing data on CCyB and capital regulatory actions as input for this table.

TABLE 1

Central bank	Rate cuts and forward guidance			Asset purchases			Liquidity provision and credit support				Regulatory easing[3]	
	Rate cuts	Negative rates	Forward guidance	Sovereign debt[1]	Other assets	Liquidity provision	Use of f/x operations	F/x swap lines	Direct lending	Programs to encourage bank lending[2]	CCyB	Capital requirements
Advanced economies												
Australia	Y	N	Y	Y	Y	Y	Y	N	N	Y	N [4]	Y
Canada	Y	N	Y	Y	Y	Y	N	N	N	N	N [4]	Y
Euro Area	N	Y [5]	Y	Y	Y	Y	Y	N	N	Y	N	Y
Japan	N	Y [5]	Y [6]	Y	Y	Y	Y	N	N	Y	N [4]	Y
Sweden	N	N	Y	Y	Y	Y	Y	N	N	Y	Y	N
Switzerland	N	Y [5]	Y [7]	N	N	Y	Y	Y	N	Y	Y	Y
United Kingdom	Y	N	Y	Y [8]	Y	Y	Y	N	N	Y	Y	Y
United States	Y	N	Y	Y	Y	Y	N	N	Y	N	N [4]	Y
Emerging economies												
Brazil	Y	N	Y	N [9]	N [9]	Y	N [10]	Y	N	Y	N [4]	Y
Chile	Y	N	Y	N [9]	Y	Y	N	Y [11]	N	Y	N [4]	Y
China	Y	N	N	N	N	Y	N	N [12]	N	Y	N [4]	N
India	Y	N	Y	Y [8]	Y	Y	N	Y	N	Y	N [4]	Y
Indonesia	Y	N	N	Y	N	Y	Y	Y	N	Y	N [4]	N
Russia	Y	N	N	N	N	Y	N	Y	N	Y	N [4]	Y
South Africa	Y	N	N [13]	Y	N	Y	N	N	N	N	N [4]	Y
Turkey	Y	N	N	Y	N	Y	Y	Y	N	Y	N [4]	N

Sources: Individual chapters (see note 3).

Notes: [1] Central governments only. State or regional governments are included in the “Other assets” column. [2] Includes funding for lending programs as well as other steps to reduce lending costs, including targeted reductions in reserve requirements. [3] We thank Rochelle Edge and Nellie Liang for providing central-bank-level information for these columns. See their chapter for additional discussion of these policies. [4] The CCyB was zero prior to the pandemic. [5] The policy rates in the euro area, Switzerland and Japan were already negative. They were not reduced further. [6] The BoJ already had strong forward guidance in place prior to the pandemic, and it did not change that guidance. [7] The SNB strengthened forward guidance on its willingness to use FX intervention. [8] In addition to securities purchases, temporary funding was provided to the government through Ways and Means arrangements. In the case of India, Ways and Means advances were also provided to state governments. [9] The ECB got temporary authority to purchase government and private bonds, but didn’t do so. The authority helped stabilize those markets. Similarly, the CBCh got authority to buy government securities, but didn’t do so. Again the authority helped stabilize the market. [10] Brazil’s swap line with the Federal Reserve was “active, but not used” -- see chapter for discussion. [11] Chile provided dollar liquidity support but did not intervene in FX markets to affect the exchange rate. [12] The PBOC took steps to “advance RMB exchange rate formation mechanism reform”; see chapter for discussion. [13] The South African Reserve Bank regularly reports model results that provide a policy path for the next year.

For tools that were not already in place, the speed and extent of the response varied depending on whether the tools had previously been used. For example, the response was very fast and aggressive with tools that had been used in the GFC, such as purchases of government bonds and the provision of liquidity to financial firms and markets. The willingness to quickly reactivate these tools also benefited from all the subsequent research on how to deal with recessions in a low inflation and low r^* environment, as well as lessons learned about the risks of acting too timidly in size or speed. In contrast, the response was slower and initially more cautious with new tools, even if the category (i.e. asset purchases) was not new. For example, the Federal Reserve was initially somewhat cautious in its purchases of municipal and corporate bonds, subsequently loosening restrictions to include lower quality asset classes. The ECB was initially cautious with the expansion of its quantitative easing (QE) programme and it was only after a spike in yields that it adopted the Pandemic Emergency Purchase Program (PEPP), which increased the flexibility of its purchases. Emerging markets were particularly cautious in adopting asset purchase programmes, often restricting their purchases to a smaller scale and limited set of assets (which did not necessarily include government debt). Some countries (such as Brazil and Chile) gave their central banks new legal authority to purchase public debt, but then never started purchases.

As central banks adopted this range of policy responses and regularly added to their toolkit, the motivation for action varied across central banks and time. Most central banks initially adopted a ‘whatever it takes’ approach focused on market stabilisation. This approach helped justify large and rapid purchases of government bonds and intervention in private markets in ways that had previously never occurred. As markets recovered and economies began to rebound, however, most central banks adjusted their communication to refocus their actions on meeting their traditional inflation and employment/growth mandates.

Rate cuts and forward guidance

In advanced economies, rate cuts followed the ‘recession playbook’ that had been developed in response to the GFC (as discussed, for example, in Bernanke 2020): cut fast to the effective lower bound (ELB) and supplement this with state-contingent forward guidance. Over the course of a few weeks, central banks with policy rates above the lower bound, including the Federal Reserve, the BoC, the BoE, the Reserve Bank of Australia (RBA) and the Reserve Bank of New Zealand (RBNZ), cut rates aggressively to their respective ELBs. Of course, the total amount of rate cuts was much less than in the GFC, as the starting level was lower (as shown in the chapter by Laurence Boone and Łukasz Rawdanowicz). Emerging markets were able to cut policy rates more aggressively, with some hitting their ELBs (such as Chile and Poland). Figure 1 shows the sharp reduction in policy rates in countries that had space to lower rates – as well as the lack of reduction in countries with rates already around zero.

Many central banks augmented these reductions in policy rates with forward guidance, partly to compensate for the smaller amount of space available to reduce rates. Reflecting the Knightian uncertainty of the situation, this forward guidance was initially open ended and not very precisely defined, albeit still state contingent (linked to economic outcomes). For example, the Federal Reserve stated that it would maintain the level of interest rates until the economy “is on track to achieve its maximum employment and price stability goals”. A few central banks went beyond state-contingent guidance and reinforced it with an implicit or explicit calendar guidance dimension. For example, the BoC said that it did not expect the conditions of its forward guidance to be met before 2023; the RBA went further, communicating that rates would likely be on hold until 2024 and adopting a yield curve control strategy to reinforce it. EM central banks were more cautious in the use of forward guidance – in part because most were still above the ELB. Some of them, however, such as Brazil, used explicit forward guidance as an alternative to cutting rates lower.

Asset purchases

Asset purchases took a variety of forms, depending on the specific needs, history, and institutional framework of each country. Initially some central banks, such as the Federal Reserve, the BoC and the BoE, focused on buying government (and in the case of the Federal Reserve, government agency) securities with the main objective of alleviating dealers’ balance sheet risk limits and easing market dislocations. The ECB was still buying bonds from its ongoing programme, but initially adopted a more hawkish stance – with the ECB’s president, Christine Lagarde, affirming that the ECB was not there “to close spreads”. This led to a sharp sell-off in peripheral yields. The ECB quickly shifted gears and launched the PEPP, which allowed for greater flexibility in the timing and distribution of purchases, with the purpose of ensuring that the effects of monetary policy were transmitted across all jurisdictions (as discussed in the chapter by Philip Lane). The BoJ removed the upper limit on Japanese Government Bond (JGB) purchases and increased the size of its existing programmes of purchases of private assets, remaining the only central bank buying equities (via exchange-traded funds, or ETFs). A number of central banks ventured into purchasing private assets (such as the Federal Reserve, BoE, ECB, BoC, and Riksbank buying corporate bonds) or into subnational bonds (such as the Federal Reserve, BoC, and RBI). Other central banks, like the RBA, adopted yield curve control, a strategy of committing to buying assets as needed to pin down a point in the yield curve, followed by a QE programme (see the chapter by Guy Debelle).³ Similarly, India adopted its version of Operation Twist, which involved the simultaneous purchase of long-term government securities and selling corresponding short-term securities in a liquidity neutral fashion to compress the term premium and reduce the steepness of the yield curve (see the chapter by Rakesh Mohan).

3 The RBA targeted the 3-year rate, which was later complemented with a traditional QE programme in the 5-10 year part of the curve aimed mostly at containing the appreciation of the Australian dollar.

Some of these asset purchase programmes became quite large and were carried out with unusual speed. For example, the holdings of government bonds of the Riksbank, BoC and BoE rose to over 40% of total government bonds outstanding, while Federal Reserve holdings of government and agency mortgage-backed securities rose by more than \$2 trillion between mid-March and mid-June 2020. Some countries deployed purchase programmes substantially larger than during the GFC, including New Zealand, BoC, and BoJ, where the size of asset purchases relative to pre-crisis GDP was more than three times that during the GFC. A few countries highlighted not only the size of the programmes, but also the speed with which the bonds would be purchased. For example, the BoE bought government bonds at almost twice the pace as in the initial phase of QE during the GFC.

Other countries, however, relied less on large and/or fast asset purchase programmes. These included several advanced economies such as Korea, Norway and Israel, which carried out some asset purchases but on a much smaller scale relative to GDP than during the GFC (see the chapter by Boone and Rawdanowicz). The Swiss National Bank (SNB) was unusual in not undertaking any securities purchases, with its policy rate already low at -0.75%, and instead relying more heavily on FX intervention (as discussed below and in the chapter by Thomas Jordan). There was also substantial variation in the approach to asset purchases across emerging markets. Some, such as Russia, did not adopt any type of asset purchase programme as the central bank worried it could dent its anti-inflation credibility (see the chapter by Ksenia Yudaeva). Among the emerging markets that did purchase assets, there was substantial variation in which assets and even how they were purchased. For example, Chile purchased bank bonds, central bank notes, and term deposits (but not sovereign debt), while other EM central banks purchased sovereign debt in either the primary or secondary markets (see the chapter by Dimitris Drakopoulos and co-authors).

Liquidity provision and credit support

Most central banks provided liquidity to banks and other financial institutions to help address emerging pressures in financial markets and mitigate any constraints on the availability of credit. These programmes commonly extended term credit under different configurations of cost and collateral requirements. In many cases, this involved an expansion in the types of entities eligible for support, including nonbank lenders and broker-dealers.

In addition, many central banks introduced programmes to support the availability of credit to a range of private sector companies, including nonfinancial companies. These programmes were intended to help ensure that viable companies could obtain the credit they needed to withstand the pandemic and restart growth once it ebbed. As noted earlier, in some cases central banks provided such credit through asset purchases, including purchases of commercial paper and corporate bonds (e.g. the Federal Reserve,

BoE, BoJ, BoC, and ECB). In addition, some central banks purchased shares of bank loans to businesses (the Fed's Main Street Lending Program) or extended loans in foreign currency (e.g. the Riksbank and the BoJ).

To achieve the same goal, many central banks also introduced programmes under which low-cost central bank funding was provided to lenders that increased their credit to the private sector or to specific sectors that have less access to corporate securities markets and are more reliant on banks. Some examples of programmes that included incentives for lending to small and medium-sized enterprises included the Term Funding Scheme with additional incentives for SMEs (TFSME) in the UK, the Term Funding Facility (TFF) in Australia, the *Fondo de Garantía para Pequeños Empresarios* (FOGAPE) in Chile and various Support Facilities in China (see the respective chapters by Ben Broadbent, Guy Debelle, Pablo García, and Guofeng Sun). In some cases, similar incentives were provided using targeted reductions in reserve requirements (for examples, see the chapter by Bruno Serra Fernandes and Fernanda Nechio and the chapter by Perry Warjiyo). In many countries, including in most of the EU, governments complemented these lending schemes with programmes of loan guarantees.

Some of these lending schemes amounted to quasi-fiscal operations or had goals outside traditional central bank mandates. For example, the ECB's pandemic emergency targeted longer-term refinancing operations (PETLTRO) programme (which offered term loans to euro area banks at a rate below the ECB's deposit rate), offered an implicit subsidy of up to 50 basis points to banks. The PBOC provided a round of special central bank lending to facilitate issuing loans for 7,597 enterprises "which supported production and transportation of medical supplies and basic supplies" (see the chapter by Sun). Similarly, the BoJ's decision to offer to pay a positive rate of 0.1% on the excess reserves of regional banks that reduce overhead costs or engage in mergers or business integration, while an incentive for the reform of Japan's regional banks, was an example of industrial policy carried out by the central bank. These quasi-fiscal operations may be justified as a second-best option – if the governments are not pursuing effective policies in a time of stress, the central bank can step in – but raise questions about potential overreach of central banks beyond their mandates.

Most central banks also communicated explicit support for expansionary fiscal policy to support their economies. While this was easier to justify due to the nature of the shock and the very low level of interest rates, it represented a break from the past behaviour of many central banks, which generally either did not talk about fiscal policy or recommended fiscal consolidation. Instead, central banks actively supported their governments' large fiscal packages, and at times appeared to be explicitly coordinating monetary and fiscal policy. In Japan, the BoJ and the Ministry of Finance issued a joint statement stressing their commitment to do 'whatever it takes' (see the chapter by Masayoshi Amamiya). In the United States, Nancy Pelosi, the speaker of the House of Representatives, reported that Fed Chair Powell indicated that the Congress could "think big fiscally" (Pelosi 2020). The ECB, since its creation a staunch defender of fiscal discipline, changed its tune and

very forcefully demanded more fiscal support from euro area governments. The BoE, while more guarded in its public statements, announced large increases in asset purchases of government bonds that roughly matched the expected increase in government debt issuance and extended the ‘Ways and Means’ facility that the government can use to obtain short-term financing from the Bank. This blurring of the line between monetary and fiscal policy was not limited to advanced economies – the government and the central bank in Indonesia issued joint decrees to coordinate the financing of the Covid-related deficit (see the chapter by Warjiyo).

Regulatory easing

Supervisors in many countries, which in many cases included the central bank, eased regulatory and macroprudential standards to support the provision of credit (see the chapters by Rochelle Edge and Nellie Liang and by Dietrich Domanski for more details). This easing mostly came in reaction to the initial market turmoil in March 2020, but also to avoid adverse effects of other policy actions on the flow of credit to households and businesses. This was a first test of the macroprudential tools that had been developed after the GFC – both in terms of whether their prior use had sufficiently reduced vulnerabilities to a sudden shock, as well as whether releasing the buffers after the shock would reduce negative amplification effects on the broader economy.

This regulatory easing operated in two main areas. The first focus was to soften regulatory capital and liquidity requirements, such as reducing countercyclical or systemic risk capital buffers (in order to allow banks to temporarily operate below required capital and liquidity levels) and suspending some constraints on leverage. These were sometimes combined with restrictions on dividend distributions. One prominent example of this easing was the countercyclical capital buffer (CCyB). Of the 16 countries that had previously set a CCyB above zero, 15 quickly lowered it – in many cases to zero (see the chapter by Edge and Liang). The second focus was allowing regulatory forbearance on assets and loan valuations, including easing collateral eligibility rules and allowing banks to apply more favourable valuation of assets and lower risk weights for certain loans, as well as providing more flexibility in the treatment of non-performing loans. Prudential supervisors in many countries also encouraged banks to help borrowers affected by the pandemic to restructure loans and grant moratoria on loan repayments to small businesses and individuals.

Steps not taken

As interesting as what was done is what was *not* done. Most noteworthy was that no country cut rates to negative (or to further negative levels for the central banks that were already at negative levels, such as the ECB, the BoJ and the SNB). Indeed, the Riksbank, which had just raised its policy rate back to zero in late 2019, left the rate at zero rather than cutting it again. During a period of market volatility, some policymakers judged that it was more effective to intervene directly by buying assets than indirectly by cutting

policy rates, and that lower rates would not have a meaningful economic impact in an environment of restricted activity. The decision not to use negative rates in countries such as Canada, Australia and Sweden was further supported by concerns about possible effects in short-term funding markets, the potential for cash withdrawals from banks at a time of fragile sentiment, and a judgement that asset purchases were more likely to prove effective in boosting the recovery (see the chapter by Per Jansson). This decision was made easier by the growing acceptance and ease of utilising asset purchases and providing liquidity support, especially as expanding beyond purchases of government bonds became widespread. Some central banks, such as the BoE, however, worried about having a limited ability to provide further stimulus if needed, especially if the yield curve remained flat, and therefore added negative rates to their official toolkit even if they did not use them. Simply highlighting that negative rates are an option can be useful as it can break the truncation of the yield curve at zero, such that some constructive ambiguity on negative rates amplifies the easing effect of asset purchases on longer-term rates.

During the initial risk-off shock in March 2020, most EM central banks were willing to ease monetary policy and allow their exchange rates to depreciate to help cushion their economies from the shock, in part encouraged by the rapid response by AE central banks that likely contained the extent of EM currency depreciations. Further supporting the decision to allow exchange rates to adjust, the pass-through to inflation was very limited – likely because the global negative demand shock and the Covid restrictions dampened the impact on inflation expectations and aggregate demand. For example, Brazilian inflation remained very well contained in 2020 despite a 40% depreciation of the Brazilian real against the dollar.

That said, some EMs and Switzerland used FX reserves to stabilise their exchange rates. Switzerland was in a fairly unique position, as the Swiss franc strengthens sharply during risk-off events and inflation was already close to zero, so that any additional appreciation could push the economy back into deflation. The SNB had little space to boost inflation through additional rate reductions (with the policy interest rate at -0.75% before the Covid shock) or through asset purchases (which would not provide meaningful support due to the limited role of the capital market in providing funding and transmitting monetary policy). Therefore, the SNB relied heavily on FX purchases combined with negative interest rates as its key monetary policy instruments to support inflation (see the chapter by Jordan). In contrast, most other countries that used FX intervention did so to moderate currency depreciations. As capital flows quickly stabilised after March, however, most EMs limited their drawdowns of reserves – despite many having substantial stockpiles (the chapter by Luis Felipe Céspedes and José De Gregorio shows that the maximum decline in reserves in EMs was about 5%, compared to 15% during the GFC). Moreover, by the end of June, more EMs had accumulated reserves on net (from attempting to slow the appreciation of

their exchange rates) rather than running them down (as usually happens during risk-off episodes). Also noteworthy, almost no EMs resorted to capital controls, despite recent support by institutions such as the IMF for capital controls to be ‘part of the toolkit’.⁴

Comparing responses in emerging markets and advanced economies

The response of EM central banks to the Covid shock was similar to that of AEs – which is noteworthy as EMs have traditionally been more constrained in their ability to respond to risk-off shocks. In March of 2020, capital flows to emerging markets dropped precipitously in a larger ‘sudden stop’ that, according to Institute of International Finance (IIF) data, was almost four times bigger than had occurred during the ‘taper tantrum’ of 2013 and even in the GFC. This initially caused emerging markets to be more cautious in their policy responses. As the spike in risk aversion abated and capital inflows returned, however, emerging markets were more able to follow the playbook adopted by AE central banks (although EMs, which are more reliant on bank credit than on market financing, often focused more on providing liquidity support to banks than outright asset purchases). Almost all emerging markets lowered their policy interest rates (as shown in Figure 1), with monetary policy focusing on stabilising growth and inflation in a countercyclical manner, rather than maintaining capital flows. Many emerging markets also launched new asset purchase programmes, provided liquidity support and credit guarantees (as discussed in detail in the chapter by Cespedes and De Gregorio), and eased regulatory requirements. In some cases, these liquidity programmes also included a currency component, such as in Brazil where repo transactions included dollar-denominated Brazilian sovereign bonds as collateral in order to provide dollar liquidity (see the chapter by Fernandes and Nechio). One notable exception of an EM that responded less aggressively than during the GFC was the PBOC, which eased interest rates less aggressively and expanded its balance sheet by only 3% in 2020 – largely because China’s economy was already starting to rebound in mid-2020 (see the chapter by Sun). The chapter by Drakopoulos et al. provides an excellent summary of these actions by emerging markets, along with the country-focused chapters.

This ability to ease monetary policy in response to a global shock – which was also seen in the GFC, but contrasts with the procyclical policies EMs often had to adopt in earlier periods – reflected several factors. First, the existence of FX swap agreements helped central banks to limit tensions in FX markets (for example, see the chapter by Warjiyo). In fact, by the autumn of 2020 some emerging markets were more worried about an ‘oversupply of dollars’ and local currency appreciations (see the chapter by Christopher Loewald). Second, the very fast and aggressive reaction by the main AE central banks stabilised financial markets and contained risk aversion, giving EMs more policy flexibility. Third, the general understanding that this shock was not caused by domestic imbalances or policy mistakes meant that financial market participants were less likely to

4 Two exceptions are Argentina and Turkey, which tightened controls on capital outflows (Bergant and Forbes 2021).

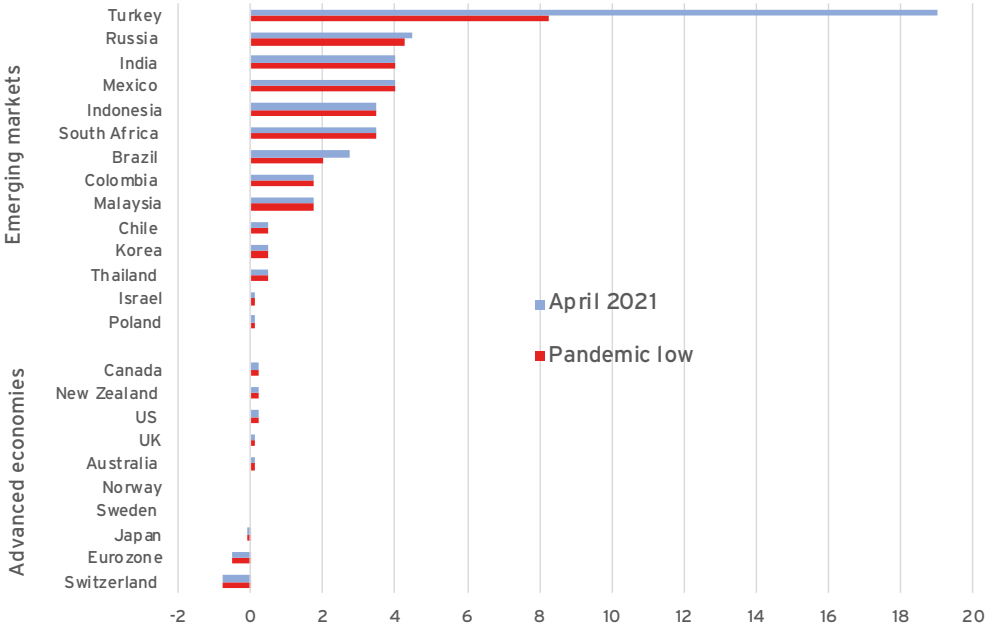
be spooked by policy actions taken to support economies and even governments. Finally, the response was supported by better macroeconomic and policy fundamentals in many EMs than in the past – including smaller current account deficits (which reduced reliance on capital flows), larger reserve stockpiles, more flexible exchange rates, strengthened credibility of inflation targeting regimes, and a greater ability to absorb sharp currency depreciations (partly due to reduced reliance on foreign-currency denominated debt). There were, however, substantial differences across countries in the extent of these changes and their corresponding ability to pursue aggressive and multifaceted easing policies. For example, governments which had shown less support for the independence of their central banks and the inflation targeting regime had more limited ability to reduce interest rates without triggering capital outflows (such as Turkey, which also had to use FX intervention heavily, as discussed in the chapter by Hakan Kara).

Although most EM central banks used many of the same tools as in the AEs, some did not follow the same sequencing of first cutting rates to the ELB and then conducting asset purchases. One reason is that the higher and less well-defined r^* in most EMs, combined with higher inflation, allowed some central banks to reduce interest rates meaningfully without encountering the ELB. Others may have been concerned that further reductions in interest rates could fuel inflation or undermine their credibility. A second reason for the difference is that asset purchases were also (and sometimes primarily) intended to stabilise government bond markets, rather than to stimulate demand. For example, Indonesia and South Africa engaged in asset purchases with policy rates at or above 4%. Some EM central banks have even pushed asset purchases further than AEs by buying bonds directly in primary markets (for example Indonesia, as discussed in the chapter by Warjiyo).

Given the similarities in the responses by EM and AE central banks to the pandemic, it is natural to ask whether the distinction between EM and AE monetary policy has become mostly academic. Not all EMs, however, were able to implement policies similar to those in AEs and generate similar policy outcomes. For example, Turkey eased policy so much (generating positive GDP growth in 2020 despite the pandemic) that it faced a substantial inflation overshoot (as discussed in the chapter by Kara), which contributed to having to tighten policy in late 2020 to avoid a currency crisis. Brazil, a country with a history of high inflation, less stable inflation expectations, and a fragile fiscal framework, did not purchase government securities despite being given temporary authority to do so during the pandemic. And Russia decided against asset purchases to preserve the credibility of their inflation targeting regime (as discussed in the chapter by Yudaeva). These experiences suggest that the ability of EMs to pursue countercyclical monetary policy and use the same tools as AEs should not be taken for granted. As shown in Figure 2, several EMs (Turkey, Brazil and Russia) have already chosen to raise their policy interest rates from the lows during the pandemic to counter inflation and support capital inflows. The AE playbook may not be available in the future if EMs backtrack on the

reforms implemented over the last decade and do not support the institutional structures (such as central bank independence and inflation targeting) that have been central to AE macroeconomic management.

FIGURE 2 CENTRAL BANK POLICY RATES: PANDEMIC LOW TO APRIL 2021



Source: Bloomberg.

Note: Emerging market central banks are categorised based on the Bank for International Settlements' definitions of "Developed" and "Emerging/Developing."

LESSONS LEARNED AND OPEN QUESTIONS

Overall, the actions taken by AE and EM central banks were effective in stabilising financial markets and, when combined with robust fiscal policy responses and efforts to contain the pandemic, helped create the conditions for a strong global recovery (see the chapter by Gian Maria Milesi Ferretti). While global output declined by 3.3% in 2020 – the worst decline during peacetime since the Great Depression – the April 2021 IMF *World Economic Outlook* expects global growth to jump to 6.0% in 2021 and 4.4% in 2022. At the same time, the impact of the crisis on inflation has been surprisingly muted – the IMF projects inflation in AEs to average 1.7% over 2021-23, similar to the average over 2017–2019.

As countries begin to recover from the pandemic, the landscape for monetary policy and central banks has fundamentally changed in a number of ways relative to before the GFC, raising issues that central banks will need to address in the coming years. First, interest rates in jurisdictions covering over 20% of the world's GDP (and over 10% of the world's population) have been zero for well over a decade – and in some parts of the world for

substantially longer. The persistent low level of interest rates could leave central banks without the tools they need to pursue their mandates given existing policy frameworks. Second, the policies implemented in response to the GFC and the Covid shock have left central banks with very large balance sheets, and the limited ability of central banks to unwind previous purchases suggests that their balance sheets will be large for years to come. These observations raise the question of how central banks should manage their balance sheets once the crisis ebbs and whether the size of a central bank's balance sheet imposes a constraint on its policy options. Third, the pandemic crisis was the first test of the post-GFC regulatory structure, and it seems appropriate to take stock of how that structure performed and whether additional changes are merited. Fourth, central banks have taken extraordinary actions to support financial markets and economies twice in twelve years. These actions may have bolstered the impression that there is a central bank 'put' – i.e. that central banks will always step in to support markets and limit investors' losses. That expectation could lead to more risk taking by investors and undermine financial stability in the future. Central banks may therefore need to consider the moral hazard implications of their policies and develop ways to address them. Finally, as central banks have taken on roles that extend their focus beyond simply meeting inflation (and sometimes employment) goals, they are paying more attention to inequality, climate change, and other issues that go beyond their formal mandates. But how much can central banks be asked to do, and do they have the tools to address a broader set of mandates?

Can central banks stabilise inflation in a low r^* world, or will they need to further expand their toolkit and/or adjust their policy frameworks?

An important lesson from the last decade is that low interest rates are likely to be a persistent feature of many economies, requiring changes to the monetary policy toolkit and framework. As discussed above, central banks began experimenting with new tools in response to the GFC, and the success of many of these tools (most notably forward guidance and asset purchases) has quickly turned them into 'conventional' policies. As yield curves flattened during the initial phase of the Covid shock, however, many central bankers questioned whether these new tools would be able to provide sufficient stimulus. In fact, it may be necessary to put the Tinbergen principle on hold until r^* increases enough for monetary policy to be able, again, to stabilize growth and inflation. When r^* is zero, the policy rate is at the ELB, and inflation is below target, does fiscal policy need to take the leading role (with monetary policy supporting) to manage demand? Or would a better solution be to try to find ways to raise r^* and be able to escape the low r^* trap?⁵

Motivated partly by these concerns, several central banks have engaged in reviews of their policy frameworks, aimed at improving their ability to meet their objectives, strengthening their credibility, and enhancing the sustainability of their policies over time. The Federal Reserve's review has been the most prominent to date, with a shift

5 See the discussion in Ubide (2020) and Bartsch et al. (2020).

to ‘flexible average inflation targeting’ (FAIT) and priority to the employment part of its mandate (over inflation) when the economy has not reached ‘maximum employment’ (see the chapters by Richard Clarida and co-authors and by Olivier Blanchard). The BoJ recently finished its review and made more modest changes, such as strengthening its ELB framework and asset purchase policies and clarifying the range of fluctuations of its 10-year rate target (see chapter by Amamiya). The ECB is currently undergoing a review, which is expected to clarify its definition of price stability. The BoC carried out a public consultation over 2019–2021 to inform its forthcoming regular framework review, and found that the preferred options were dual mandates and average inflation targeting, with little support for negative rates.

Under its new framework, the Federal Reserve will explicitly test the limits of growth until inflation rises a bit above target, and will then aim to offset earlier shortfalls of inflation before returning inflation to the target. This new approach reflects the change in the economic environment (especially in AEs) towards low (and at times, too low) and well-anchored inflation expectations, combined with constraints on monetary policy caused by the lower bound. In the event of a recession involving a sustained period at the lower bound, a commitment to overshoot the inflation target for a time will imply a period of higher inflation and a longer period of low interest rates, both of which should reduce longer-term real interest rates and therefore help to boost spending. This strategy, however, requires strong resolve. Despite introducing in 2016 an inflation overshooting commitment similar to that of the Federal Reserve under FAIT, the BoJ has not been able to lift inflation to the target. This suggests that words will not be enough, and such a finely calibrated approach could involve significant risks (see the chapter by Blanchard). On the one hand, if the central bank wavers when inflation starts to rise above target and tightens prematurely, the strategy will fail and low inflation will become even more engrained. On the other hand, if the central bank waits too long after inflation picks up before tightening, expectations of higher inflation could become engrained, requiring a period of tighter policy to move actual and expected inflation back to target. Success will require strong communication to ensure that the strategy is understood and seen as time-consistent. Given the output costs of sustaining inflation that is too low, however, the Federal Reserve believes it is a risk worth taking in order to restore inflation to its objective. Other central banks where inflation is too low, such as the ECB, may also want to consider if these types of innovations are an improvement over current frameworks.

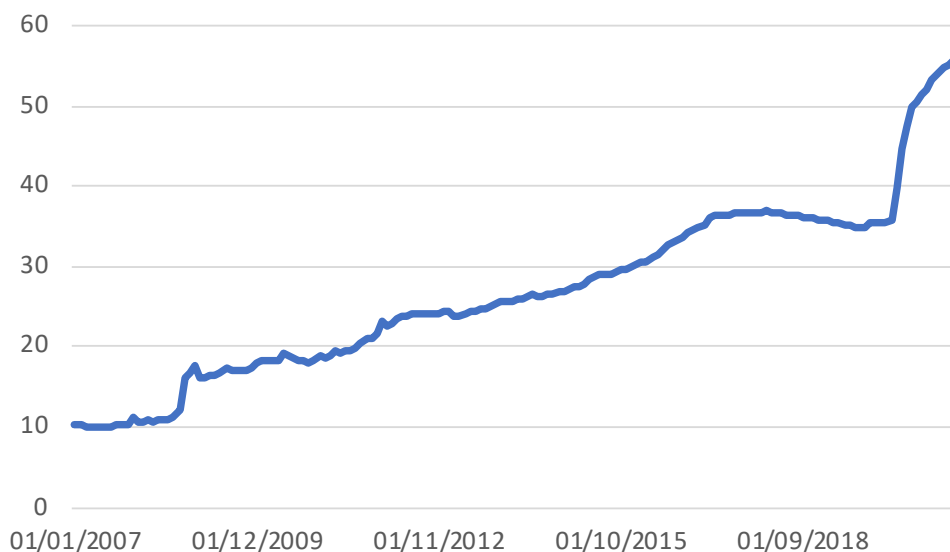
Even if new tools and frameworks provide some additional monetary policy space, low interest rates and the resulting limits on monetary policy will likely raise persistent questions about the institutional infrastructure needed to achieve more effective monetary and fiscal policy cooperation when required. Such infrastructure should be designed to ensure that central banks maintain their independence, despite having previously encouraged large fiscal expansions to help support activity and inflation, and despite their large holdings of government debt. This will be especially important during a period when the central bank raises interest rates to meet its inflation mandate and

subsequently causes an increase in government interest payments. What if the increase in interest rates raises concerns about fiscal sustainability and perhaps even triggers a fiscal crisis? These types of dilemmas could become an even bigger issue in countries with a fiscal policy framework that is not well defined (such as the US) or incomplete (such as the euro area), or in countries without a history of central bank independence (such as in many emerging markets). These types of dilemmas could also become bigger issues in countries that clearly coordinated with fiscal authorities and purchased government bonds directly instead of in secondary markets (as in the case of Indonesia, as discussed in the chapter by Warjiyo). Central banks could become increasingly reliant on the political skills of their leadership to manage these challenges, which would then also risk increasing politicisation in other spheres.

Does the size of central bank balance sheets matter?

When central banks started buying assets in 2008, they were very quick to communicate that they were planning to reduce the size of their balance sheets when it came time to reduce policy accommodation. Such a reduction was seen as helping to stave off inflationary fears and perhaps ‘creating space’ for renewed quantitative easing in the future. At the time, this intent to unwind purchases of government debt was deemed important to highlight how quantitative easing was different from central bank financing of government deficits (in the latter case, central banks would hold the debt indefinitely and unrelated to meeting an inflation mandate). Progress on reducing the size of the balance sheet was generally limited, however, given slow recoveries and weak inflation outcomes. The ECB reduced the size of its balance sheet between 2013 and 2015 by running down its liquidity support programmes, but not by selling securities (see the chapter by Athanasios Orphanides). The Federal Reserve was only comfortable reducing the size of its balance sheet starting in 2017, through a slow process of reducing reinvestments of principal. And in the end, it unwound a relatively small portion of the purchases made after the GFC given the new policy implementation framework it adopted. (The size of the Fed’s balance sheet only declined from \$4.5 trillion in 2018 to \$3.75 trillion in 2019.) As a result, when the Covid shock hit, many central banks added significant amounts of assets to what were already record-size balance sheets. Could this substantial expansion in balance sheets create problems in the future – especially if unwinding purchases in response to Covid is as challenging as after the GFC? The answer is not clear cut, as it has several dimensions.

From an operational standpoint, there is no obvious need to reduce the size of balance sheets. Several central banks have shown that it is possible to raise their policy rates and effectively tighten financial conditions even with a large balance sheet (an example being the Federal Reserve’s series of rate hikes starting in 2015). Paying interest on excess reserves breaks the link between the size of central bank balance sheets and the stance of monetary policy. These experiences suggest that central banks may not feel pressure to reduce the size of their balance sheets in the future.

FIGURE 3 G4 CENTRAL BANK BALANCE SHEET (% OF GDP)

Source: Central bank data.

That being said, there is political risk from the prospects for significant losses. Although a striking feature of the Covid shock compared to the GFC has been the minimal political criticism of central bank actions to date, politicians have been known to change their minds. Politicians could quickly become vocal in their criticism of central bank actions – especially if governments have to cover substantial losses on asset holdings. In that scenario, central banks with bigger balance sheets may fear that their independence is at risk and be more prone to policy errors to avoid losses and the subsequent political criticism. For example, central banks could be more hesitant to provide the optimal amount of easing during the next slowdown. Alternatively, central banks with larger holdings of longer-term securities could delay raising rates to fight inflation out of concern for potential losses. Some central banks have attempted to protect themselves against this risk by obtaining indemnities from their governments for their asset purchase programmes (for example, the BoC and BoE; see the discussion in the chapter by Toni Gravelle and Carolyn Wilkins), but, even in those cases, there may be political risks as the public becomes aware of any losses (as happened in Switzerland in the past).

Furthermore, permanently larger balance sheets and central bank presence in government securities markets could have an impact on market liquidity, infrastructure, and composition, as well as on government debt-management strategies. For example, the BoJ decision in 2016 to shift from QE to yield curve control reflected in part the concern that the central bank was at risk of running out of JGBs to buy in a few years (after taking into account the minimum amount of JGBs that Japanese financial institutions would want to hold for liquidity and regulatory reasons). Governor Bailey at the BoE has expressed concerns about running out of ‘policy space’, and thereby not being able to use

asset purchases to stabilise dysfunctional markets in the future. The Fed and the other central banks are not yet as large a presence in their government bond markets as the BoJ was in 2016, but if central banks undertake large-scale asset purchase programmes every decade, and balance sheets do not shrink significantly between such programmes, then constraints may emerge sooner than expected. Of course, if governments continue to respond to crises with large-scale fiscal stimulus and debt issuance, large volumes of additional government debt could remove this constraint. Similarly, if central banks continue to expand the types of assets they include in purchase programmes, this could provide further optionality. Continued large central bank holdings of longer-term government debt could also have implications for debt management. In effect, longer-term, fixed-rate debt held permanently by the central bank is a floating-rate obligation of the consolidated government (TBAC 2020). Thus, decisions by the central bank regarding its holdings should have implications for the choice of issuance by the government, and it may be important for the central bank and government to communicate clearly their intentions for purchases and issuance.

These issues raise a series of questions about the future conduct of monetary policy. After the GFC, some central banks (such as the Federal Reserve and ECB) decided to manage the size of their balance sheets primarily via changes to their reinvestment policies, with a clear message that outright sales were not likely anytime soon. The Covid shock instigated very large and rapid acquisitions of assets for market stabilisation purposes early in 2020 – programmes which then transitioned in many places into more gradual purchases as part of a monetary policy strategy to support inflation and growth. This leads to the question: should central banks consider outright sales and/or more rapid unwinding of the bonds they purchased for market stabilisation purposes? In other words, should central banks differentiate between assets purchased for market stabilisation reasons and those for more traditional monetary policy purposes? For example, the ECB has drawn a distinction between asset purchases for its Asset Purchase Programme (for monetary policy purposes) and its Pandemic Emergency Purchase Programme (initially justified for market stabilisation purposes, later to offset the disinflationary effect of the pandemic). That leaves open the possibility that it could choose to unwind the PEPP purchases sooner than the APP purchases, though the ECB has noted that reductions in PEPP holdings will be managed in a way that avoids effects on the desired monetary policy stance (see the chapter by Lane). Considering the very high sensitivity of financial markets to asset purchases, differentiating purchases in this way may raise significant communication challenges.

Finally, should central banks reconsider the post-GFC consensus on policy sequencing – i.e. wait to start reducing the size of the balance sheet until short-term interest rates have increased enough to provide sufficient space to be able to cut to support an economy during a recession? Taking the argument further, central banks may want to consider QE as a stabilisation tool on par with short term rates, and thereby put similar weight on ensuring space to use both tools. Doing so could allow them to consider adjustments at

different parts of the yield curve as tools to respond to different situations (including in good times), but would require more active use of QE as a complement to adjustments in policy rates. For example, if an economy had no output gap, trend growth, and stable inflation at the target, but an overheating housing market, the central bank might choose to keep the short-term policy rate steady but tighten policy at the long end of the yield curve via gradual sales of longer-term securities (which tend to be more closely linked to the housing market). Such an approach would use the balance sheet to directly address an emerging financial stability risk, which could be particularly helpful for central banks with limited macroprudential tools.

How can central banks balance the need to stabilise markets with the potential for moral hazard?

As central banks aggressively intervened to stabilise markets in the spring of 2020, they quickly expanded the types of assets that they were willing to purchase and the markets they were willing to support through liquidity and credit schemes. This expansion of exposure and intervention raises a host of questions. For example, the Federal Reserve expanded its market interventions from the fixed amount of government bond and agency mortgage-backed securities (MBS) it purchased in response to the GFC to unlimited amounts of these two asset classes, to municipal and investment-grade corporate bonds, to high-yield debt, and to corporate loans. Several other central banks, such as the BoC and Riksbank, expanded their menu of asset purchases similarly. The ECB de facto suspended its capital key for bond purchases and suspended the collateral rating limits, which contributed greatly to the stabilisation of peripheral yields (see the chapter by Orphanides).

In taking these steps, many central banks went beyond their role of ‘lender of last resort’ to become the ‘buyer of last resort’. The strategy worked in terms of stabilising markets, sometimes simply by announcing the programme and not even carrying out purchases. For example, the Federal Reserve was able to stabilise the corporate and municipal bond markets with very few purchases simply by being willing to behave as a backstop and thereby shifting private sector expectations towards a better equilibrium. In Brazil and Chile, the announcement that the central bank had been given the legal authority to purchase government debt appeared to help stabilise markets, even though the authority was never used. The Federal Reserve and other central banks, however, did have to buy very large amounts to stabilise government bond markets, suggesting that positions built up prior to the pandemic might have been too large given market infrastructure constraints (including dealer balance sheet limits) once investors pulled back. The central bank actions also contributed to reducing the impact of the crisis on bankruptcies and defaults, both in the financial and nonfinancial sectors. The external and exogenous nature of the Covid shock may have reduced concerns about moral hazard in these markets during this episode (as argued in the chapter by García). This expanded role of central banks to support markets during periods of stress, however, may also create the

expectation of similar interventions in future crises. That expectation, in turn, could encourage increased risk taking and potentially undermine financial stability, which could necessitate improvements in supervision and regulation.

Were the post-GFC macroprudential reforms successful?

The Covid pandemic was the first real test of the post-GFC regulatory reforms, and the tighter regulations appear to have helped build resilience in banking systems. According to the Bank for International Settlements (BIS), global banks had built a capital buffer of about seven percentage points versus the Pillar 1 minimum (see the chapter by Claudio Borio). Stress tests indicated that most banks had sufficient capital to withstand the severe economic effects of Covid, allowing banks to act as shock absorbers instead of amplifying the stress in financial markets, as had occurred during the GFC. In addition, the formidable operational resilience of the global financial sector while most people worked largely from home should not be overlooked. Of course, banks may face additional pressures as economies recover and companies that had previously been supported by government programmes encounter solvency problems. Nonetheless, banks were believed to be in such solid shape that many countries softened regulations and released buffers after the Covid shock in order to further support lending.

The extent to which the regulatory reforms adopted in response to the GFC were responsible for the resilience of the banking system, however, is unclear. On the one hand, banks' resilience during such an extreme shock suggests that the new regulations were effective, and perhaps could even be looser in the future. On the other hand, that resilience also reflected the support provided to financial markets and institutions through asset purchases, liquidity support, credit programmes, and regulatory forbearance, which might indicate that the regulations were not tight enough. Put slightly differently, if the regulatory reforms made banks so resilient, why did banks and markets need so much support? Of course, the Covid shock was such an extreme outlier that the cost of tightening regulations against this type of event might not have been justified. Moreover, the fact that most banks chose not to draw on their capital buffers (because of reputational and cost of capital concerns, as discussed in the chapter by Domanski) highlights the potential asymmetry and downward rigidity of cyclical macroprudential tools. Looking ahead, policymakers will need to think about how to balance the costs and benefits of possible changes in regulations in light of the pandemic experience.

Also, even though banking systems withstood the Covid shock fairly well, other segments of financial markets experienced an unprecedented amount of stress – including markets that were believed to be relatively safe and liquid (such as the US Treasury market). The dysfunction in certain markets raised concerns that the tighter regulations on banks had excessively limited their ability or willingness to intermediate risk at the peak of the crisis. This was to some extent to be expected; the spirit of Basel III was to strengthen the core and shift risks to the periphery in order to lower the odds of systemic crises. Nonetheless, the transfer of risks outside the core could involve entities that are weaker

or less well hedged than banks, or less able to handle sharp market moves, as well as involving entities about which regulators are less well informed (see the chapter by Borio). This may imply that a tighter regulatory regime for banks leads to more frequent periods of sharp market volatility and stress outside the core of the system. But is the firebreak robust enough, or could these risks also become systemic? Some, including Treasury Secretary Yellen, have noted potential vulnerabilities in the shadow banking sector and called for more work to understand these risks (Yellen 2021).

At the very least, the fact that central banks had to intervene in markets twice in twelve years, and in many cases much more aggressively in terms of the size and scope of their interventions in the most recent episode, requires careful thought about the role central banks should be expected to play to stabilise markets. What qualifies as enough market disfunction to justify such interventions? Which markets would potentially merit support? What authority and institutional structure should be involved in making these decisions? Or is constructive ambiguity helpful in order to reduce moral hazard?

Are central banks doing too much? Should they take on more?

After the GFC, as inflation remained weak in most advanced economies and most central banks had limited ability to raise interest rates or unwind asset purchases, there was widespread discussion of whether central banks would be ‘out of tools’ when the next recession came. In 2020, central banks showed that they were far from out of tools as they launched a host of new programmes to support economies and stabilise financial markets. Even though there was widespread agreement that health policy and fiscal policy were the most effective tools for fighting a pandemic (especially with forced lockdowns and limited mobility), central banks had a critical role to play. As they continually innovated and designed new programmes to support different segments of financial markets and the economy, expectations for the role that central banks can play have continued to expand in other directions as well. This expansion is now reaching into issues such as inequality, climate change, digital currencies, and even structural policies. Even as many major central banks struggle to reach their most basic mandate – inflation at its target – some are suggesting they tackle even deeper issues with their limited tools.

This mandate creep could sow the seeds of problems down the road. The pursuit of these additional goals may conflict with central banks’ ability to achieve their traditional mandates for low inflation and, in some cases, growth or employment. It is not clear how much central banks can accomplish on some important issues – such as climate change – that are far removed from monetary policy (see the chapter by Blanchard). Moreover, central banks may be unable to succeed in meeting these additional expectations given the tools they have – leading to criticism and undermining political support for their independence. Furthermore, if central banks enter the realm of structural policies (an example being the BoJ’s scheme to incentive consolidation in the regional banking

sector), it may be hard to limit such involvement. For example, such involvement could lead to requests that the central bank buy specially issued bonds to fund specific activities – further blurring the lines between fiscal and monetary policy.

CONCLUSION AND OUTLINE OF THE EBOOK

While the pandemic is still far from over, a preliminary assessment suggests that central banks have responded effectively to the initial phases of the Covid shock – through a combination of forceful monetary policy that built on the programmes first tried in response to the GFC, combined with an entirely new set of initiatives to directly support financial markets and provide credit to the economy. This response has entailed an unparalleled expansion of reach – well beyond the narrow inflation-targeting focus of most central banks. These programmes were crucial to stabilise economies and financial markets when countries were locked down and while vaccines were developed and rolled out, but this expansion of reach and responsibilities also raises numerous questions about monetary policy and the role of central banks in the future.

This book is divided into four sections. This first section sets the stage by concluding with a summary of the economic developments during Covid to which central banks responded. The second section includes chapters by senior policymakers from eight major AE central banks, summarising the actions taken by their institutions in response to Covid and the rationale for their policy choices. The third section provides the same analysis for eight EM central banks. The final section includes eight chapters discussing specific aspects of these central bank actions, including a closer look at specific types of policies (such as asset purchases, liquidity provision, and macroprudential regulations), a more focused look at the economic impact across AEs or EMs, and discussions of the major challenges facing central banks in the future.

REFERENCES

Bartsch, E, A Bénassy-Quéré, G Corsetti and X Debrun (2020), *It's all in the Mix: How Monetary and Fiscal Policies Can Work or Fail Together*, Geneva Report on the World Economy 23, ICMB and CEPR.

Bergant, K and K Forbes (2021). “When does Policy Space Limit Options? Lesson from Covid and History”, mimeo.

Bernanke, B (2020), “The New Tools of Monetary Policy,” Presidential Address to the American Economic Association, 4 January.

Pelosi, N (2020), “Dear Colleague on Latest Progress on Coronavirus Response”, 17 March.

TBAC – Treasury Borrowing Advisory Committee (2020), “Implications of the SOMA Portfolio for Treasury Debt Management”, Presentation to Treasury staff, 4 February.

Ubide, A (2020), “Fiscal Policy When Interest Rates are Zero”, in *The Euro in 2020*, Fundacion Ico.

Yellen, Janet L. (2021), “Remarks by Secretary Janet L. Yellen at the Open Session of the Meeting of the Financial Stability Oversight Council”, 31 March.

ABOUT THE AUTHORS

Kristin Forbes is the Jerome and Dorothy Lemelson Professor of Management and Global Economics at MIT’s Sloan School of Management. She has regularly rotated between academia and senior policy positions. From 2014-2017 she was an External Member of the Monetary Policy Committee for the Bank of England. From 2003 to 2005 she served as a Member of the White House’s Council of Economic Advisers and from 2001-2002 as a Deputy Assistant Secretary in the U.S. Treasury Department. She also was a Member of the Governor’s Council of Economic Advisers for the State of Massachusetts from 2009-2014. Forbes is currently the Convener of the Bellagio Group, a research associate at the NBER and CEPR, and a member of the Aspen Economic Strategy Group and Council on Foreign Relations. She also serves in a number of advisory positions, including for the Bank for International Settlements, the New York Federal Reserve Bank, and for the Managing Director for the International Monetary Fund. Forbes academic research focuses on international finance and macroeconomics, including capital flows, contagion, financial crises, macroprudential policy, exchange rates and inflation dynamics.

Angel Ubide is a Managing Director and Head of Economic Research for Global Fixed Income and Macro at Citadel. Prior to joining Citadel in 2018, Mr. Ubide was a Managing Director within the Investment Strategy Group at Goldman Sachs, after serving in senior roles at the hedge funds D.E. Shaw and Tudor Investment Corporation. He began his career as an Economist at the International Monetary Fund (IMF). In parallel to his financial services career, Mr. Ubide has been deeply involved in the global policy discussion, mostly as a Senior Fellow at the Peterson Institute for International Economics. He is a member of the Advisory Council on Economic Affairs of the Spanish Government, of the Steering Committee for the Euro 50 Group, of the Advisory Board of Esade EcPol, and of the Economic Club of New York. Mr. Ubide’s research has focused on global macroeconomics, including exchange rates and inflation, monetary and fiscal policy, and European policy issues. His book on economics, monetary policy, and markets, *The Paradox of Risk*, was published in 2017.

Bill English is Professor in the Practice of Finance at the Yale School of Management. Prior to joining the Yale faculty in 2017, Mr. English spent 25 years at the Board of Governors of the Federal Reserve System, including, from 2010 to 2015, as Director of the Division of Monetary Affairs and Secretary to the Federal Open Market Committee. While on leave from the Board of Governors, Mr. English served as a Senior Economist at the White House Council of Economic Advisers (1996-97) and the Bank for International Settlements (2002-03). Prior to joining the Federal Reserve, Mr. English taught at the

University of Pennsylvania and the University of Chicago. His research focuses on banking and monetary policy issues, including monetary policy frameworks, monetary-fiscal cooperation, and the impact of monetary policy on banking institutions. Mr. English received a PhD in Economics from the Massachusetts Institute of Technology in 1986 and a BA in Economics and Mathematics from Yale University in 1982.

CHAPTER 1

A year like no other

27

Gian Maria Milesi Ferretti¹

The Brookings Institution and CEPR

2020 was a year like no other. The official death toll of the COVID-19 pandemic, likely substantially understated, was close to 2 million people worldwide, and continues to rise rapidly into 2021. World economic activity declined by 3.3% when measured with weights based on purchasing parity – the worst peacetime decline since the Great Depression. By comparison, during the global financial crisis of 2008–09, world GDP declined by 0.1%.² While the crisis affected the entire world economy, its incidence across the world was very uneven. At the country level, this primarily reflected three factors: (1) the severity and duration of the domestic pandemic; (2) the sectoral composition of economic activity, including the relative importance of contact-intensive sectors and the ease to work remotely; and (3) the dependence on foreign demand, especially for travel and tourism. Within countries, the crisis impact was particularly severe for low-wage workers, especially women and the young, given the magnitude of their employment in contact-intensive sectors (e.g. Bluedorn et al. 2021, IMF 2021: Chapter 3). A further hit to the employment for women came from the protracted school closures, which triggered a sharp decline in labour force participation among mothers.

1 THE OPENING ACT

The year 2020 opened with optimism that it would be better in terms of global economic growth than 2019, during which growth fell below 3% for the first time since the global financial crisis of 2008–09. Financial markets had turned much more optimistic in the last quarter of 2019, and the IMF forecasts presented in Davos in January of 2020 envisaged a pickup in global growth to about 3.3% in 2020 (IMF 2020a).

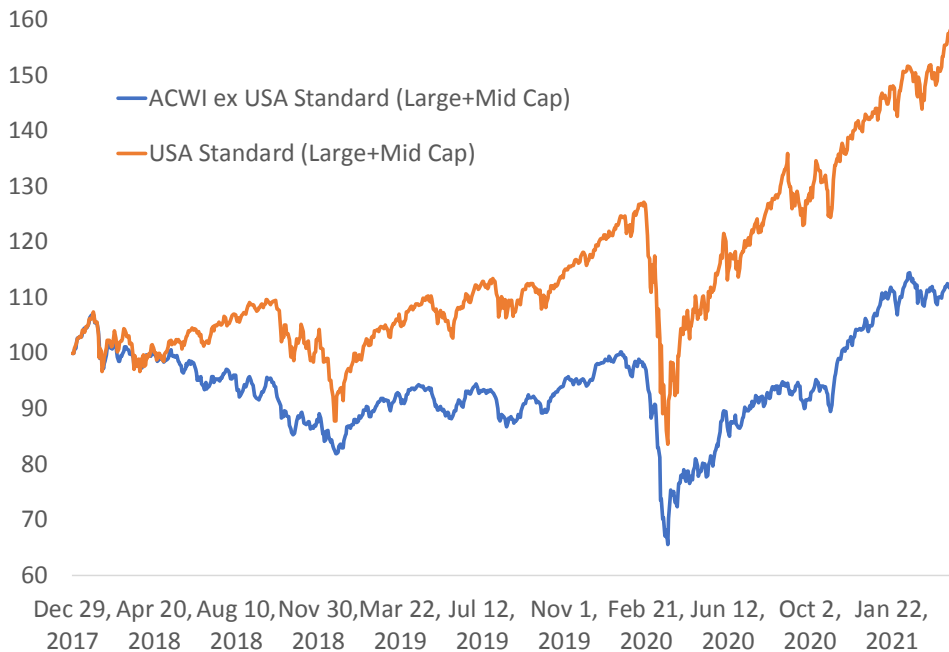
Just as those forecasts were finalised, the repercussions of COVID-19, a mysterious virus spreading in China's Hubei province, were becoming more apparent. Over the following weeks, China extended the national Lunar New Year holiday, implemented travel restrictions, and instituted a drastic lockdown of Hubei province (the epicentre of the outbreak), with much economic activity coming to a standstill in February.

1 I am very grateful to my former IMF colleagues, in particular Malhar Nabar, Michael Girard, Andrea Pescatori, and Rafael Portillo, for useful suggestions and precious help in gathering data, and to David Wessel for very useful comments.

2 World growth measured with weights based on GDP at market exchange rates (which give more weight to advanced economies) as -3.6% in 2020 and -2% in 2009.

Financial market optimism persisted into mid-February. But with evidence of the virus spreading outside China's borders, including a rapidly mounting caseload in Italy and other European countries in late February, a risk-off environment took hold, with world stock valuations declining by over a third between mid-February and 23 March (Figure 1), US long-term interest rates declining by 100 basis points, and the US dollar broad index appreciating by 8% in the space of a little over two weeks. Emerging economies were hit by unprecedented portfolio outflows and even the more liquid markets, such as the one for US Treasuries, suffered disruptions.

FIGURE 1 STOCK PRICE INDICES IN US DOLLARS: UNITED STATES AND REST OF THE WORLD



Source: MSCI

2 THE GREAT LOCKDOWN

While China was able to stop the spread of the pandemic, and gradually re-open its economy in March, advanced economies facing rising infections implemented strict lockdown measures, which, together with voluntary social distancing, took a heavy toll on economic activity.

With the scale of economic disruption and the severity of the financial market turmoil becoming increasingly clear, governments took unprecedented measures to strengthen their health systems, support the most affected workers and sectors, ease financial conditions, and provide liquidity support. Those measures, which are well documented

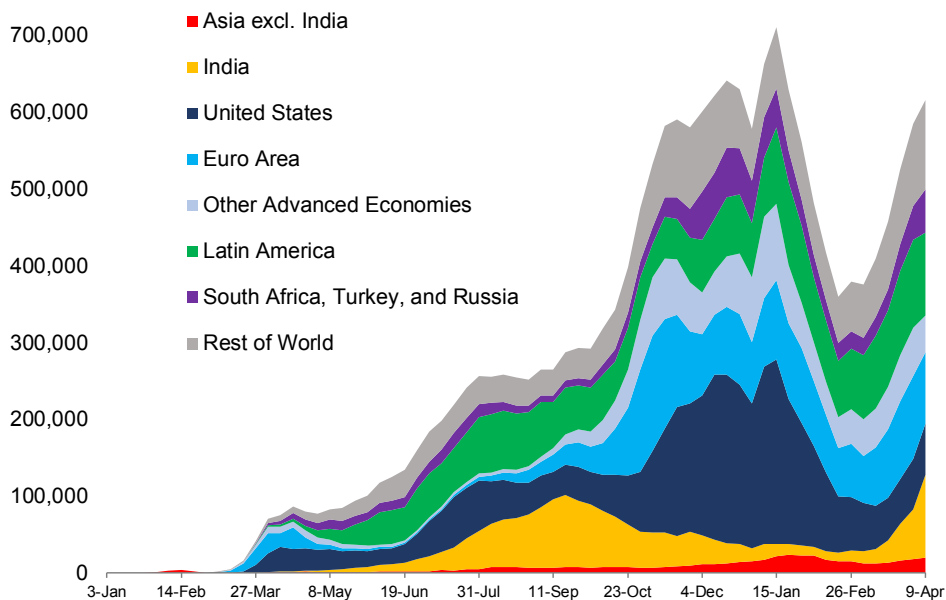
in the rest of this volume, were crucial in buttressing financial market stability and supporting confidence. Key examples are the measures adopted by the US Federal Reserve Board (credit facilities, international swap lines, an asset purchase programme, etc.), the Pandemic Emergency Purchase Program and other actions taken by the European Central Bank, and the fiscal support provided by the US government's \$2.3 trillion CARES Act. These measures, together with similar actions undertaken elsewhere, played a crucial role in restoring financial market stability and supporting confidence.

With the drastic decline in activity during the month of March, and signs of an even more substantial hit to come in April, forecasts for global growth were slashed at an unprecedented speed and to an unprecedented extent. The IMF's April World Economic Outlook forecast a decline in global GDP of 3.3% in 2020, a swing of 6½ percentage points in the space of ten weeks.³

The first aggregate measure of the decline in overall economic activity associated with the pandemic came with the release of China's GDP for the first quarter of 2020: an unprecedented decline of 6.8% on a year-on-year basis, and 9.8% on a quarterly basis. But GDP in the first quarter also declined in economies that were affected by the pandemic later than China, with US GDP declining by 1¼% and euro area GDP by 3¼%.

FIGURE 2 NEW CONFIRMED CASES

Daily average over previous week, updated 9 April



Source: Johns Hopkins University.

³ The growth forecast published in April 2020, -3%, was adjusted to reflect new PPP country weights implemented in June 2020.

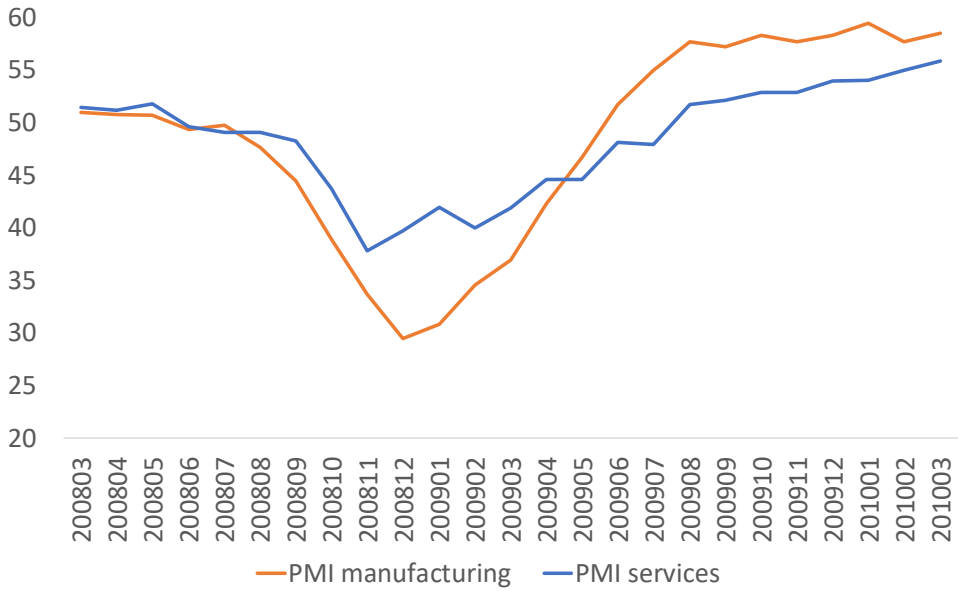
The global trough for economic activity came in the month of April, as more and more countries implemented lockdown measures and social distancing. Activity in contact-intensive sectors came to a complete standstill in many economies, with domestic and especially international travel grounding to a halt, and global trade collapsed. By the end of April, close to 75% of all recorded cases were in advanced Europe, Canada, and the US (Figure 2), and so were 87% of recorded deaths. In the US unemployment sky-rocketed, with 22 million jobs lost between February and April. In most European economies, hours worked dropped dramatically but the increase in unemployment was kept at bay by furlough and other measures to preserve jobs.

This decline in activity was not just unprecedented in its size and world scope, it was also unprecedented from the perspective of the composition of economic activity. Traditional recessions are characterised by a big decline in investment and consumption of durable goods – the manufacturing sector is the most affected, while demand for nondurable goods and especially services is more resilient (see the top panel of Figure 3 for the experience during the 2008–09 global financial crisis). But during this crisis, government policy through lockdown measures as well as people’s social distancing choices to reduce the risk of infection put the economy into something akin to a medically induced coma. The decline in economic activity was strictly linked to the extent of personal contact involved in its production and sales. As a result, services were much more severely affected than manufacturing (Figure 3, bottom panel), and consumption declined even more sharply than investment. Non-contact-intensive sectors were affected as well through several channels: the decline in people’s mobility, as well as the repercussions of measures such as school closures which reduced the labour supply of parents, especially women. The tragic toll of the crisis in terms of severe illness and lives lost was heavily concentrated among the elderly and people with pre-existing conditions.

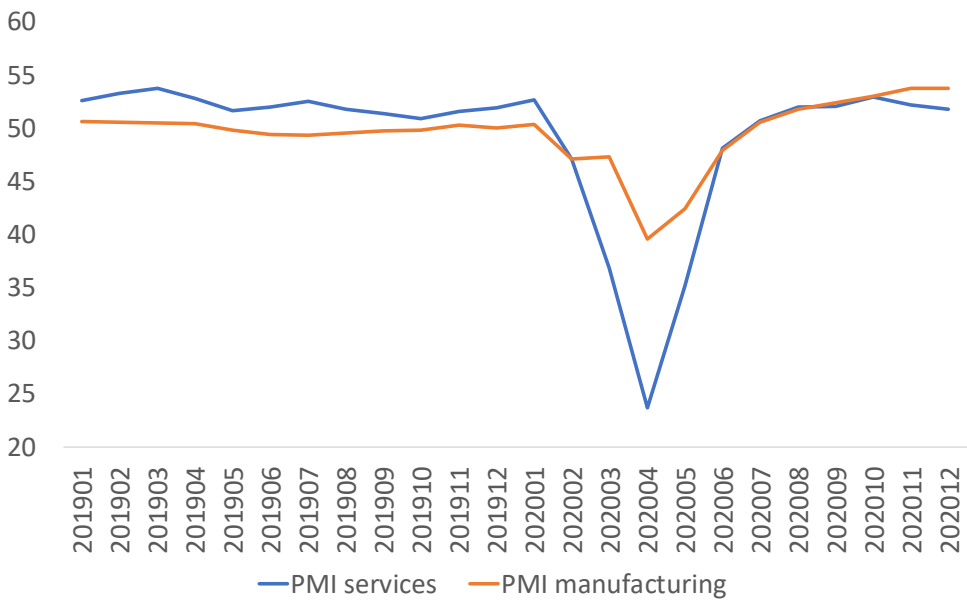
The first few weeks of the crisis took a very heavy toll on commodity markets as well. With a fast deterioration in the outlook, much reduced mobility, and the breakdown of the OPEC+ agreement among oil suppliers, oil prices plummeted among a large accumulation of inventories. The price of Brent, which was close to \$70 a barrel at the beginning of 2020, dropped to some \$17 a barrel by late April (Figure 4). The decline in metal prices was more modest (some 18% between mid-January and early April) as the effects of the sharp decline in demand were partly offset by supply disruptions. The commodity shock compounded the difficulties of several oil exporters already facing rising COVID cases.

FIGURE 3 GLOBAL PMI: THE GLOBAL FINANCIAL CRISIS (TOP) AND THE COVID CRISIS (BOTTOM)

a) Global Financial Crisis

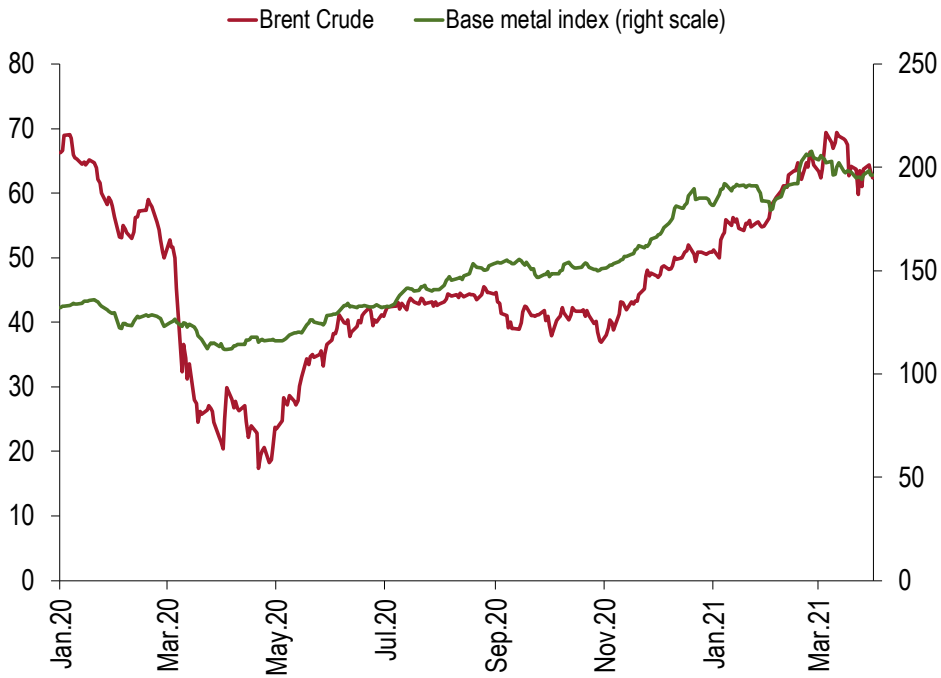


b) Covid crisis



Source: IHS Markit.

FIGURE 4 COMMODITY PRICE INDICES



Source: International Monetary Fund.

3 GRADUAL REOPENING

The drop in mobility, as a result of lockdowns and social distancing, was generally effective in containing infections in the most affected countries, reducing the pressure on health systems and allowing for a gradual re-opening during May and June. But while the pandemic slowed in most advanced economies, especially in Europe, cases rose sharply in several emerging and developing economies: India, Latin American countries, as well as Russia, Turkey, and South Africa. The strengthening of activity was mostly visible in retail sales, as discretionary consumer spending rebounded after the dramatic decline during the months of March and April. Industrial production also ticked up, but even by June it remained some 7.5% below the levels recorded in late 2019 (Figure 5, top panel).

The mood in financial markets also brightened considerably, with world stock prices continuing to make up some of the ground lost during late February and March, spreads declining, and portfolio flows to emerging market economies gradually turning positive again. The improved outlook was also reflected in commodity markets: oil prices recovered from their April lows, while remaining well below their levels early in the year, while metal prices also edged higher, benefiting from the brisk recovery in China. Stronger market sentiment implied reduced pressure on emerging market currencies that

had depreciated sharply in March and made it easier for central banks of these countries to adopt conventional and unconventional easing measures to cushion the impact of the crisis on activity, as documented in the later chapters of this book.

Notwithstanding the progress made during May and June, as well as sizable government support to the private sector, especially in advanced economies, economic activity during the second quarter recorded an unprecedented decline, which was even more evident if China was excluded. The hit to activity differed across regions, reflecting in particular differences in the severity of the pandemic, the extent of lockdown restrictions and social distancing, and the composition of economic activity, with countries most reliant on contact-intensive sectors, such as tourism, hit more heavily. Collapsing external demand also took a heavy toll on more open economies.

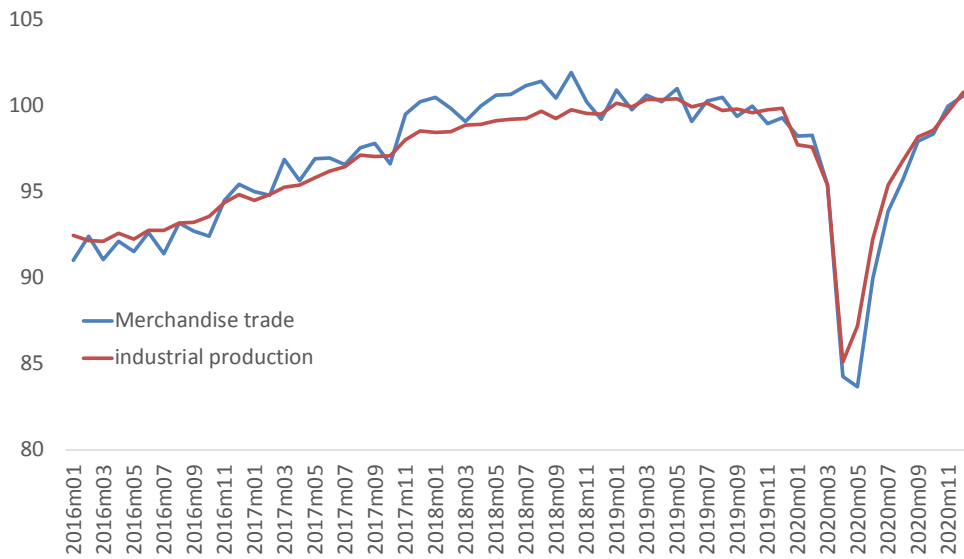
Across advanced economies, GDP in the second quarter of 2020 declined by 17% in Spain, 19% in the UK, 14% in Italy, 13.6% in France, and 9% in the US on a quarter-on-quarter, non-annualized basis. Advanced Asian economies, that managed to contain the pandemic more effectively, fared somewhat better, with GDP in Japan contracting by 8.4% and in the group of other Asian advanced economies (Hong Kong, Korea, Singapore, and Taiwan) by 3.7%.

For the group of emerging and developing economies, there was a very sharp dichotomy between developments in China and elsewhere. With the pandemic brought under control, the Chinese economy gradually re-opened and activity experienced a very strong rebound, with GDP growth reaching 13.5%. Public investment spurred economic activity and exports also fared very well, sustained by the demand for medical equipment, including masks and ventilators, increased demand for equipment to ease remote work, as well as by the limitations to production elsewhere imposed by the lockdown restrictions.

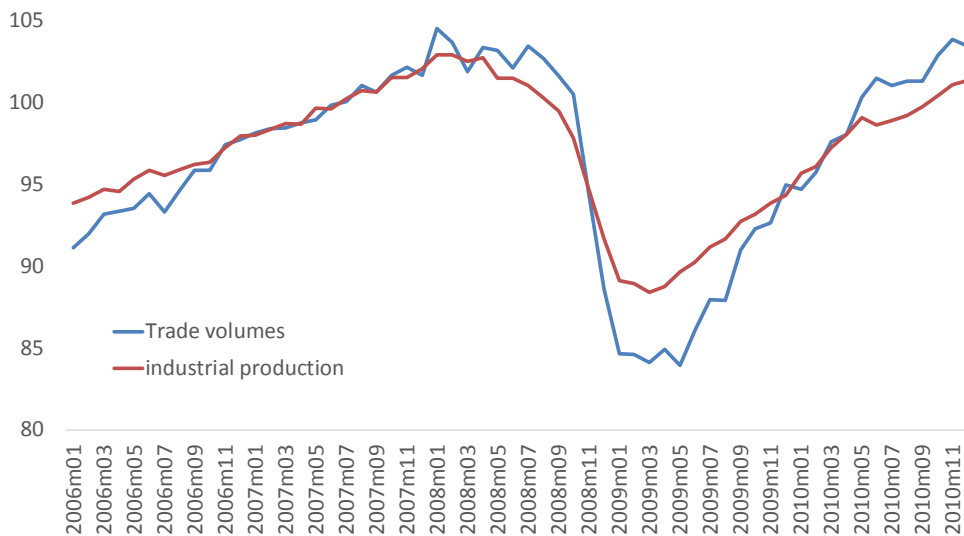
But elsewhere in the emerging and developing world outcomes were much more dire, and GDP declined very sharply—by some 14% for a sample of larger economies that publish quarterly data. A notable case was India, which adopted very severe lockdown measures to counter rapidly rising infections: GDP declined by a quarter. Across other emerging regions, Latin America—hit particularly severely by the pandemic, and experienced a GDP decline of 14%, and emerging Europe by 9.8%.

FIGURE 5 GLOBAL TRADE IN GOODS AND INDUSTRIAL PRODUCTION: THE COVID CRISIS (TOP) AND THE GLOBAL FINANCIAL CRISIS (BOTTOM)

a) Covid crisis



b) Global Financial Crisis



Source: CPB Netherlands.

4 THE BIG REBOUND

The third quarter of 2020 saw a continuation of the general pickup in economic activity across the globe as reopening proceeded. Recorded Covid-19 cases continued to rise, but in some cases, such as in advanced Europe, this reflected a massive increase in testing, which also captured asymptomatic or light cases of Covid-19.⁴ The average age of infected individuals also dropped sharply, as the older, more vulnerable segments of the population adopted precautionary measures to prevent infection. The recovery in aggregate demand was supported by the sizable government measures implemented in the first half of the year, which boosted disposable income despite the toll taken by business closures on private earnings. By the month of July, global PMIs were back in expansionary territory for both manufacturing and services.⁵ Given the nature of the crisis, the recovery in manufacturing was more rapid than the one for services, and by September global industrial production was above its level at the start of the year, powered in particular by China and other East Asian economies such as Korea and Taiwan.

These developments were also reflected in the dynamics of trade in goods, where manufacturing and mining output play a crucial role (Figure 5, top panel). By the month of September, the volume of world trade in goods was only 1.5% below its level a year earlier, in comparison with a 17% shortfall in May. The speed of the recovery in the goods sector stands in sharp contrast with the experience during the global financial crisis (Figure 5, bottom panel). But activity and international trade in services remained instead much weaker: trade was down by a quarter in value terms in the third quarter of 2020 compared to 2019.

Overall, the more encouraging macroeconomic prospects were also reflected in a further improvement in risk sentiment, with the MSCI index of global stock prices back at its end-2019 levels, supported in particular by rising share prices in the US. The size of the economic rebound in the third quarter was roughly proportional to the size of the decline in the first half of the year, but the lingering impact of the pandemic and associated restrictions and social distancing measures implied that the strong recovery was not sufficient to fully reverse the previous sharp output declines.

- Among advanced economies, the US grew by 7.5%, the euro area by 12.4%, and the UK by over 16%. This notwithstanding, at the end of the third quarter, GDP for advanced economies was still below its pre-pandemic (Q4 2019) level by 3.7%.

4 While the number of new recorded cases in advanced Europe in the third quarter of 2020 rose to 1.8 million (from 1.1 million in the 2nd quarter), the number of recorded deaths declined more than ten-fold, from 140,000 in the second quarter to around 12,000 in the third.

5 With the crisis causing severe disruptions in the collection of traditional statistics, the use of alternative data sources (mobility data, credit card payments, hotel and restaurant reservations, etc.) helped provide a better real-time picture of underlying economic activity.

- For emerging economies excluding China, GDP rebounded by over 10% quarter-on-quarter, as India and economies in Latin America and emerging Europe recovered some of the lost ground. This notwithstanding, GDP remained well below its pre-pandemic level at the end of the quarter.
- Meanwhile, the recovery in China continued, with GDP rising by a further 1.9%.

However, more negative news came towards the end of the quarter: after the summer lull infection cases started to rise again, prompting concerns that the re-imposition of restrictions on mobility and economic activity could lead to a ‘double-dip’ recession.

5 THE SECOND WAVE AND VACCINES

The last quarter of the year saw a combination of two crucial factors pushing in opposite directions: a dramatic resurgence of infections, which led to a re-imposition of restrictions and a decline in mobility; and the development of effective vaccines, which contributed to further boosting financial market confidence.

Caseloads in many countries increased very sharply in October and triggered a return of restrictions to economic activity. Market conditions reflected the increased uncertainty over the recovery, with some declines in stock prices and oil prices in October. But economic activity proved more resilient than expected, with a much-improved ability of economies to function under these hazardous conditions. With signs of this resilience and the positive news on vaccines in November, there was a return of market optimism, and world stock prices in US dollars finished the year 14% higher than when the year started, and 68% higher than at their trough on 23 March. In commodity markets, oil prices rebounded and base metal prices rose above pre-pandemic levels, sustained by the robust recovery in China’s industrial production and strong demand from the electric vehicle market. Portfolio flows to emerging and developing economies (some \$200 billion during the quarter) were the highest ever recorded in nominal terms. While over half of those flows went to China, flows to other emerging economies were robust as well.

Government restrictions and declines in mobility again affected most severely contact-intensive services, while industrial production continued its recovery, with robust demand for goods, especially durables, benefiting from substitution effects as consumers were unable to spend on contact-intensive services.⁶ Aggregate demand was again supported by the strength of private disposable income, particularly in advanced economies where government transfers remained substantial.

6 For example, US consumption of durable goods was up by 12% in the quarter compared to the corresponding period in 2019.

A double-dip recession materialised in the euro area, where the second wave of infections was particularly severe, with sharp contractions in activity in France and Italy. But growth remained generally positive elsewhere, despite the rising infections: around 1% in the US and the UK, close to 3% in Japan, and stronger in some of the countries with deeper recessions in the second quarter (over 9% in India and around 4% in Latin America).

6 A LOOK BACK AT 2020

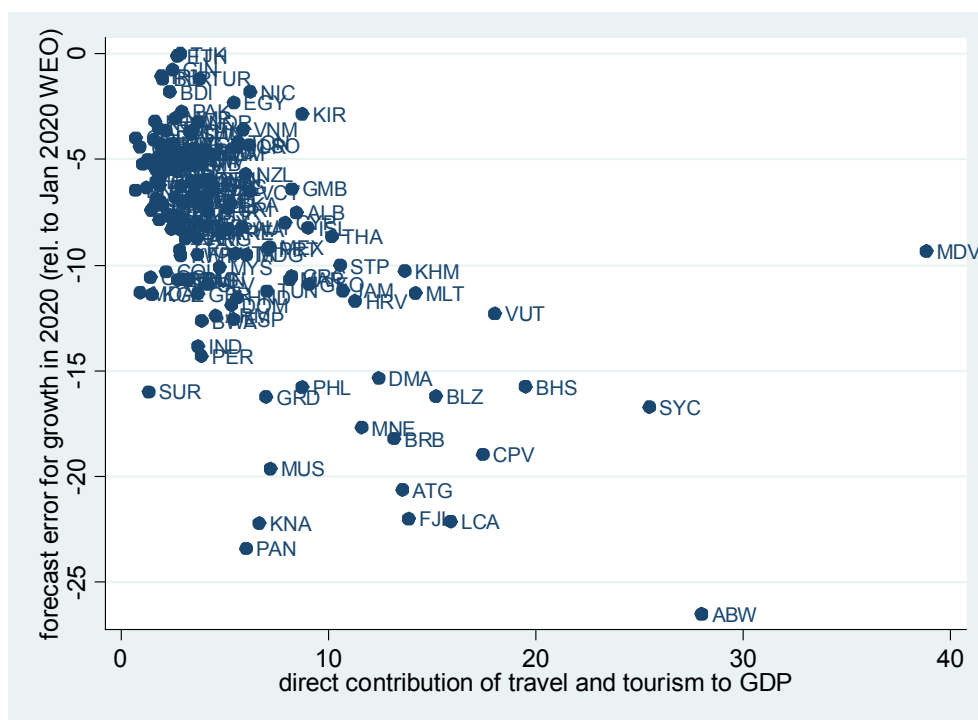
The countries that fared best – comparing their performance in 2020 with pre-pandemic growth forecasts (as presented in IMF 2020a) – were China and a few advanced economies in East Asia, including Korea and Taiwan. They were able to quickly bring infections under control and were subsequently able to leverage their manufacturing prowess, benefiting from the strength of global demand for goods, both in terms of medical equipment and telecommunications equipment.

Among the remainder of emerging economies, emerging Asia (excluding China) and Latin America were very severely hit, as the restrictive measures to control the spread of the pandemic, together with social distancing, took a very heavy toll on activity. In January 2020 the *World Economic Outlook* was forecasting growth of 5.5% in emerging Asia excluding China: the preliminary figures for the outturn point to a contraction exceeding 5%. The growth forecast for Latin America was more modest (1.6%) – GDP is estimated to have declined by 7%. But contractions were severe across the board, including in the Middle East, emerging Europe, and sub-Saharan Africa, where even countries with less severe domestic effects of the pandemic were severely affected by the decline in external demand. Small countries heavily dependent on tourism were among the most affected (Figure 6).

Among advanced economies, the decline in GDP was particularly large in Europe, which was very severely affected by both waves of the pandemic. GDP declined by 6.6% in the euro area, where countries relying more heavily on tourism such as Spain and Italy were very severely hit, and by close to 10% in the UK. The GDP decline in the US was more moderate at -3.5%, as the plunge in activity in the first half of the year was somewhat less severe and the economy continued to grow in the fourth quarter.

The crisis affected employment-intensive sectors, and hence its impact on employment was even more severe than the impact on GDP. By the end of 2020, US employment was 9.5 million jobs below its pre-pandemic level. In Europe, the decline in employment was reduced by the substantial recourse to furlough, but hours worked in Italy, Spain, and the UK dropped by over 10% during the first three quarters of 2020 relative to the corresponding period in 2019.

FIGURE 6 GDP GROWTH IN 2020 (DEVIATION FROM PRE-COVID FORECAST) AND THE SHARE OF TOURISM



Note: the horizontal axis measures the share of GDP accounted for by travel and tourism activities. The vertical axis measures the deviation of growth outcomes in 2020 from pre-COVID forecasts (IMF, 2020a).

Source: The World Bank (share of tourism activities); IMF (deviation of growth outcomes in 2020 from pre-COVID forecasts).

The impact of the crisis on inflation was a priori ambiguous, given the combination of large shocks from both the demand and the supply side. In practice, however, inflation in 2020 remained below pre-pandemic levels throughout the period, both in advanced economies and in most emerging markets, with measures of inflation expectations generally inching down.⁷

Given the severity of the macroeconomic shock, one could have expected very severe financial market repercussions and a wave of defaults. Instead, after the initial panic in March, financial markets stabilised and subsequently recovered almost across the board. The unprecedented extent of timely support from central banks and fiscal authorities across the globe was crucial in avoiding large-scale bankruptcies and their amplification effects on the extent of the downturn. Indeed, bankruptcies declined relative to the previous year, while they typically rise substantially during recessions (IMF 2021: Figure 1.21). But the macroeconomic legacy of the crisis and the large increase in public debt will

7 A caveat is that changes in the composition of consumption baskets and the de facto changes in the nature of some services imply that consumer price inflation may have underestimated the increase in the cost of living during 2020.

pose thorny challenges to public finances across the globe for the years ahead. And the unwinding of the monetary policy, credit, and liquidity support described in the chapters of this eBook will challenge monetary and financial regulation authorities.

7 PROSPECTS FOR 2021 AND BEYOND

The world economy is projected to recover at a brisk pace in 2021. Projections from the IMF's April 2021 World Economic Outlook envisage growth of 6% in 2021 (Figure 7) and 4.4% in 2022. The progress on the vaccine front, especially in advanced economies, as well as continued fiscal support are projected to facilitate reopening and strengthen activity and employment.

But the world economy is far from being out of the woods. Vaccine access for lower-income countries remains limited, and this is taking a heavy toll both in terms of health and the pace of recovery. And within countries, the crisis has taken a heavy toll on the most vulnerable across the world. In advanced economies and some emerging markets an appropriately large fiscal response has helped to cushion the impact of the crisis on disposable income, but action has been more limited in the fiscally constrained economies of most of the emerging and developing world, which are experiencing rising poverty and a worsening of income distribution.

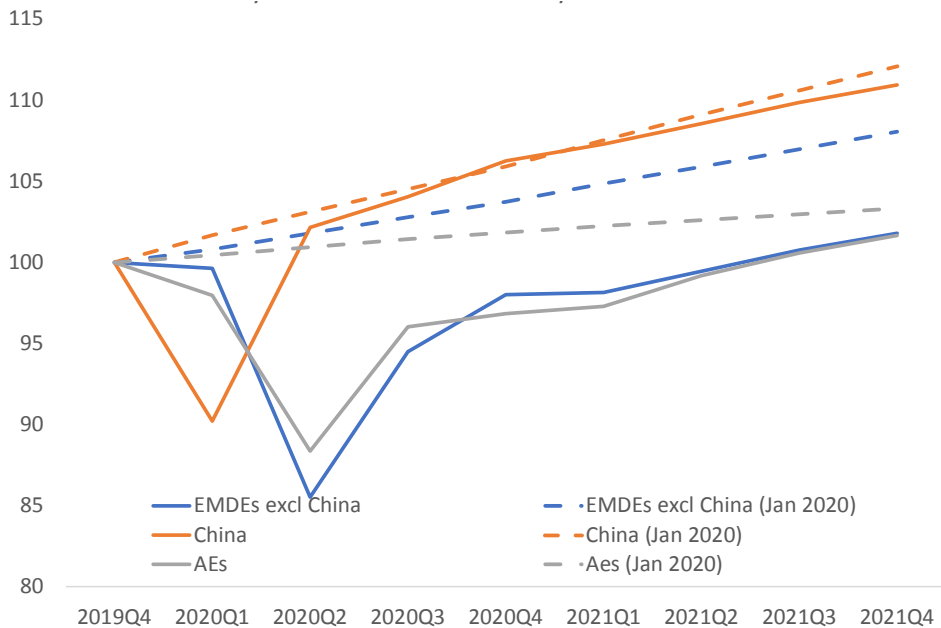
So, when can countries expect to regain their pre-pandemic level of economic activity? A few, including China, have registered positive growth in 2020, but 165 have experienced outright output declines and an even larger number have experienced declines in GDP per capita. And will the crisis entail sizable permanent losses in activity relative to the pre-pandemic trend? As already mentioned, the crisis has affected all countries, but to different degrees, depending in particular on the severity of the pandemic, the structure of the economy (especially dependence on contact-intensive sectors) and the extent and efficacy of policy support. Those same factors, together with the pace of vaccination, are going to be crucial in the recovery phase as well. And, as noted in the April 2021 *World Economic Outlook* (IMF 2021b), “factors such as the proportion of ‘teleworkable’ jobs, share of employment in small and medium enterprises, depth of capital markets, size of the informal sector, and quality of and access to digital infrastructure also played roles – in both the downturn and the speed of the recovery.”

The IMF projections suggest that US GDP will exceed its pre-pandemic level in the second quarter of 2021 and exceed its pre-pandemic trend in the fourth quarter of this year, supported by rapid vaccine rollout and sizable fiscal stimulus. European advanced economies, however, experienced a deeper recession in 2020 and have generally slower vaccine rollout (with the exception of the UK); GDP is projected to exceed its pre-pandemic level only in 2022.

Among emerging and developing economies, the picture is even more heterogeneous. While GDP in some countries (e.g. India and Turkey) exceeded its pre-pandemic level in the last quarter of 2020, others are expected to regain that level of activity only in 2021 or even 2022, given the difficulties in obtaining and distributing vaccines as well as generally weaker policy support. As a result, in many emerging market economies and low-income countries, the consequences of the crisis on activity are projected to be longer lasting, with permanent output losses relative to pre-pandemic projections substantially exceeding those in advanced economies (Figure 7).

FIGURE 7 QUARTERLY GDP, ADVANCED ECONOMIES AND EMERGING MARKET AND DEVELOPING ECONOMIES: PRELIMINARY 2020 OUTCOMES AND 2021 IMF FORECASTS

Compared to January 2020 forecasts



Source: International Monetary Fund (2020a, 2021) and author's calculations.

Uncertainty remains high. This relates primarily to the evolution of the pandemic – in particular, the speed with which vaccinations will proceed, the effectiveness of vaccines against Covid-19 variants, the path of infections more generally, and how economic activity adjusts to health-related challenges. Adverse developments on the pandemic front could trigger a reassessment in fundamentals and tighter global financial conditions. Such tightening could also occur as a result of the asynchronous nature of the recovery. In particular, with the US likely to exceed its pre-Covid GDP trend later this year, markets

could price in a more rapid pace of monetary policy normalisation. In turn, this could pose challenges to policymakers in emerging economies, where sovereigns will have substantial financing needs and the recovery is likely to be more delayed.

On the other hand, expedited vaccine production and rollout would facilitate a more rapid return of affected sectors to pre-pandemic levels of activity and limit the extent of scarring. And the size and persistence of the health-related challenges to the economy matter crucially for economic policy strategies as well, as they affect the cost of supporting affected people and firms and the extent of structural reallocation of resources that may need to take place.

In closing, a few words on inflation prospects. With a strong economic recovery in the next few quarters and the increase in commodity prices, inflation is expected to rise temporarily, and long-term interest rates have risen in recent months, particularly in the US. Well-anchored inflation expectations, still-substantial labour market slack, and relatively flat Phillips curves would suggest that a more persistent increase is unlikely. This notwithstanding, a heated policy debate has developed in the US on the likelihood of a more persistent rise in inflation, given the sizable fiscal stimulus and the very accommodative stance of monetary policy (e.g. Summers 2021, Blanchard 2021). These issues will be taken up in Part IV of this eBook and in the conclusions.

REFERENCES

Blanchard, O (2021), “In defense of concerns over the \$1.9 trillion relief plan”, PIIIE Realtime Economic Issues Watch, 18 February (www.piie.com/blogs/realtime-economic-issues-watch/defense-concerns-over-19-trillion-relief-plan).

Bluedorn, J C, F G Caselli, N-J H Hansen I Shibata and M Mendes Tavares (2021), “Gender and Employment in the COVID-19 Recession: Evidence on “She-cessions,” IMF Working Paper 2021-095.

IMF (2020a), *World Economic Outlook Update*, January.

IMF (2020b), *World Economic Outlook*, April.

IMF (2021), *World Economic Outlook*, April.

Summers, L(2021), “The Biden stimulus is admirably ambitious. But it brings some big risks, too”, *The Washington Post*, 4 February (www.washingtonpost.com/opinions/2021/02/04/larry-summers-biden-covid-stimulus/).

ABOUT THE AUTHOR

Gian Maria Milesi Ferretti is a senior fellow in the Hutchins Center on Fiscal and Monetary Policy. He was previously Deputy Director in the Research Department of the International Monetary Fund (2014-21). In this role, he directed the department's work on multilateral surveillance, including the World Economic Outlook, G-20 reports, spillover analysis, and economic modeling. Between 2012 and 2014 he was Deputy Director in the Western Hemisphere Department and IMF mission chief to the United States. He received his undergraduate degree in economics from Università di Roma La Sapienza in 1985 and his Ph.D. from Harvard in 1991. He joined the London School of Economics thereafter, and moved to the IMF in 1993. Since 1996 he is a Research Fellow of the London-based Center for Economic Policy Research CEPR.

He has published extensively in refereed journals in the areas of international capital flows, international financial integration, current account sustainability, capital controls, taxation and growth, and political economy.

PART II

THE CENTRAL BANK RESPONSES IN ADVANCED ECONOMIES

CHAPTER 2

Monetary policy in Australia during Covid¹

Guy DeBelle

Reserve Bank of Australia

The Reserve Bank of Australia (RBA) has taken a number of complementary policy actions to support the Australian economy since the onset of Covid. The RBA has lowered its policy interest rate to near zero, set a target for the three-year government bond yield, enhanced its forward guidance, undertaken a programme of purchasing government bonds, and provided long-term, low-cost funding to the banking system.

The overall aim of all these monetary policy actions has been to support economic activity in Australia through a number of channels. The policy actions undertaken have underpinned record low funding costs across the financial system and for governments. Lower borrowing costs free up cash flow for both households and businesses, some of which is spent. The lower interest rates and the funding for the banking system support the flow of credit to households and businesses. Lower interest rates also support asset prices, which boost balance sheets, and thereby consumption and investment. Finally, a lower structure of interest rates leads to a lower value of the Australian dollar than would otherwise be the case. The end result is a stronger Australian economy, with strong employment and inflation consistent with the target.

The policy response has evolved over the pandemic period as information about the extent of the pandemic and its economic impact has unfolded. The initial policy decisions were taken in March 2020, including at an unscheduled policy meeting on 18 March. Further measures were announced in September and November 2020 and in February 2021.²

In mid-March 2020, as the impact of the virus and the health policy actions on the Australian economy became evident, the Reserve Bank Board³ put in place a comprehensive package at an unscheduled meeting to support jobs, incomes and businesses, so that when the health crisis receded, the country was well placed to recover strongly. The package comprised the following:

1 More information can be found on the RBA website at www.rba.gov.au

2 The data and information in this chapter are as at end-March 2021.

3 Monetary policy at the RBA is determined by a nine-person Board, chaired by the Governor (see www.rba.gov.au/monetary-policy/about.html).

- A reduction in the cash rate target (the policy interest rate) to 25 basis points, having already reduced the cash rate to 50 basis points at the earlier March Board meeting.⁴
- Forward guidance that the Board will not increase the cash rate target until progress is being made towards full employment and it is confident that inflation will be sustainably within the 2–3% target band.
- The introduction of a target on the three-year Australian Government bond yield of around 25 basis points.
- The purchase of bonds to address the dysfunction in the Australian government bond market.
- A Term Funding Facility (TFF) for the banking system under which funds equivalent to 3% of lending could be borrowed from the RBA for three years at 25 basis points (against eligible collateral) up until end-October 2020. The TFF provided additional incentives to support lending to businesses, particularly small and medium-sized businesses.
- The continued use of the RBA's open market operations to make sure that the financial system had a high level of liquidity. The RBA had already been expanding its liquidity provision prior to this mid-March Board meeting to address the growing dislocation in financial markets.
- The modification of the interest rate corridor system, with the rate paid on Exchange Settlement (ES) balances (the balances the banking system holds with the RBA) set at ten basis points.

In September 2020, as the end-October deadline for the drawdown of funding under the TFF approached, the Board decided to expand the TFF to provide additional low-cost funding equivalent to 2% of lending in the banking system and to extend the drawdown period to June 2021.

At the November 2020 Board meeting, the Board decided on a further package of measures to support the economy. The Board took this decision given the assessment that Australia was facing a prolonged period of high unemployment and inflation was unlikely to return sustainably to the target range of 2–3% for at least three years:

- A reduction in the cash rate target, the three-year yield target and the interest rate on new drawings under the TFF to ten basis points, from the previous rate of 25 basis points.
- A reduction in the interest rate on ES balances from ten basis points to zero.

⁴ The cash rate is the overnight interest rate on borrowing and lending by banks of balances held at the RBA. It is similar to the Federal Funds rate in the US. Banks are required to maintain a positive balance in their accounts at the RBA, which are known as Exchange Settlement Accounts.

- The introduction of a programme of government bond purchases, focusing on the five- to ten-year segment of the yield curve. The RBA would buy \$100 billion of government bonds over the following six months in the secondary market, purchasing bonds issued by the Australian Government (AGS) as well as by the Australian states and territories (semis).

In February 2021, to provide further support to the Australian economy as it recovered, the Board announced that it would purchase an additional \$100 billion of government bonds, after the first programme was completed.

The policy actions taken to deliver low funding costs have had a number of complementary elements, and have been mutually reinforcing in underpinning low interest rates across the economy. These policy actions have also had a material impact on the RBA's balance sheet, which has more than doubled in the past year, as show in Table 1.

In the rest of this chapter, the implementation and the direct transmission of these policy changes are described in more detail.

TABLE 1 RBA BALANCE SHEET (\$ BILLION)

	29 February 2020	24 March 2021
RBA assets	184	392
AGS	0	157
Semis	0	32
TFF	0	92
Liquidity operations*	84	18
RBA liabilities	184	392
ES balances**	2	158
Government deposits	32	70

Notes: * Reverse repo, FX swap and near-maturity bonds. ** Excluding balances held for payments settlements after hours.
Source: RBA

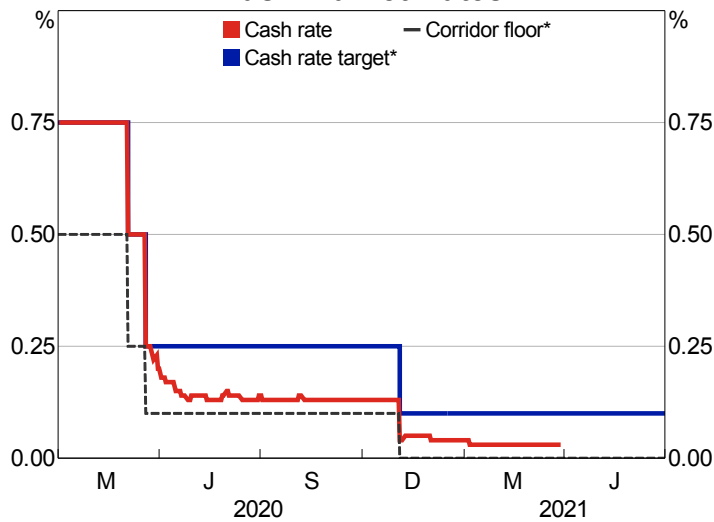
POLICY RATE REDUCTION

The Reserve Bank Board has reduced the cash rate target to what it assesses to be the effective lower bound of ten basis points. The target was reduced to 25 basis points in March 2020, followed by a further reduction to ten basis points in November. The

Board has stated that it does not see negative rates as being appropriate in Australia in the current circumstances, given significant uncertainty about their efficacy and the availability of other tools to provide monetary stimulus.

At the same time as the reduction in the cash rate target, the remuneration rate on ES balances was reduced by less than the cash rate, first to ten basis points in March 2020 and then to zero in November 2020. This resulted in a narrowing of the lower side of the policy interest rate corridor to 15 basis points and then to ten basis points. Previously the corridor was plus or minus 25 basis points around the cash rate target.

FIGURE 1 CASH MARKET RATES



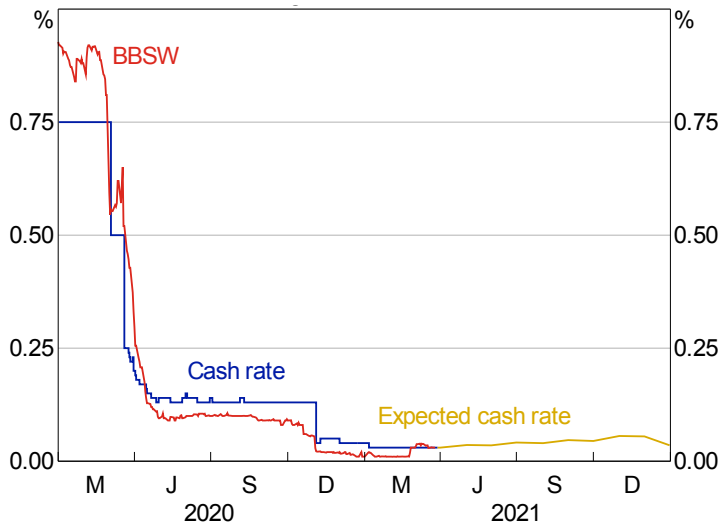
Note: * Assumes unchanged future policy settings.

Sources: RBA; Tullet Prebon (Australia) Pty Ltd.

The RBA is now effectively operating a floor system given the large amount of liquidity in the system as a result of the RBA's policy actions, including the TFF, bond purchases and additional liquidity provision through market operations.

As a result, the actual cash rate has declined to three basis points. This is a small spread above the floor of the corridor reflecting a small credit premium and transactions costs. The Board had expected this outcome of the actual cash rate declining below the cash rate target, given the large increase in liquidity in the system.

The reduction in the cash rate target, the actual cash rate and the remuneration on ES balances has seen all short-term interest rates decline to historically low levels, including the important interest rate benchmark the Bank Bill Swap Rate (BBSW).

FIGURE 2 MONEY MARKET RATES

Sources: Bloomberg; RBA.

BOND PURCHASES

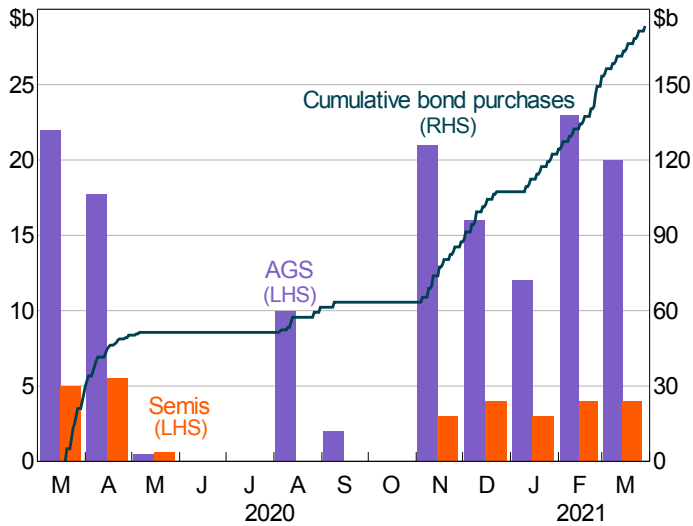
Turning to bond purchases, these have been comprised of three elements:

- purchases to maintain the three-year yield target;
- purchases to address market dysfunction; and
- since November 2020, the \$100 billion bond purchase programme.

From March 2020, bond purchases were focused on the three-year point of the yield curve. This is because in Australia, most borrowing is at variable rates that key off the front part of the yield curve. Many borrowing rates are priced off the three-month Bank Bill Swap Rate (BBSW) and fixed-term borrowing rates tend to be for no longer than three years. This is in contrast to other markets such as the US, where longer-term yields are more important benchmarks for borrowing rates.

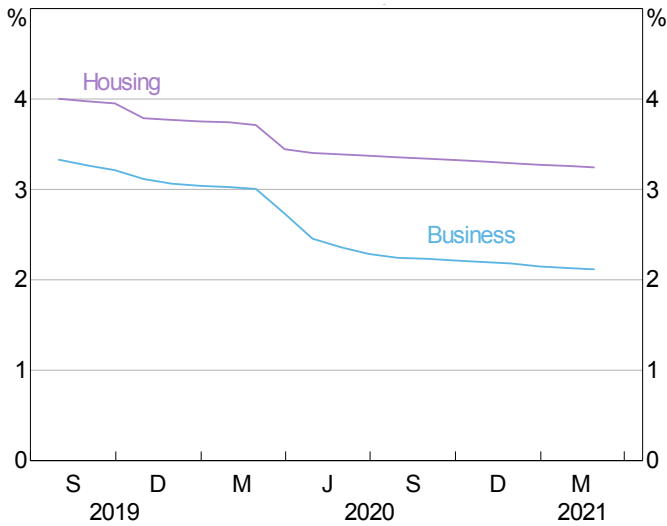
The three-year bond target has helped anchor the Australian yield curve and has had significant traction in lowering borrowing rates for households and businesses. Directly targeting a longer-term risk-free interest rate is also a natural extension of the target for the cash rate, which is the risk-free interest rate at the very start of the yield curve. It has also helped reinforce the RBA's forward guidance regarding the cash rate (discussed below). Hence it is appropriate to characterise the policy as a yield target, not yield curve control.

FIGURE 3 RBA BOND PURCHASES (FACE VALUE, UP TO AND INCLUDING 29 MARCH 2021)



Source: RBA.

FIGURE 4 AVERAGE LENDING RATES (VARIABLE, EXISTING LOANS)



Sources: Australian Prudential Regulation Authority (APRA); RBA.

To maintain this target, the RBA has conducted auctions to buy the three-year target bond when the yield has moved away from the target in a material and sustained way. Such purchases have been necessary on relatively few occasions. Much of the time, the market has had sufficient confidence in the sustainability of the target that the yield has been anchored close to the target, which was 25 basis points from March to November

2020, and then ten basis points. Initially the target was for the April 2023 bond maturity. Subsequently the target was changed to the April 2024 maturity when it became the closest bond maturity to the three-year horizon.⁵ In March 2021, the Board agreed that it would not consider removing the yield target completely or changing the target yield of ten basis points. If the Board were to maintain the April 2024 bond as the target bond, rather than move to the next bond, the maturity of the target would gradually decline until the bond finally matured in April 2024. The Board will consider this question again later in 2021 when it has more information about the economic recovery and the labour market.

FIGURE 5 THREE-YEAR AUSTRALIAN GOVERNMENT BOND YIELD*



Note: * Three-year target bond is the April 2023 Treasury bond until 20 October 2020, and the April 2024 Treasury bond thereafter.

Sources: RBA; Yieldbroker.

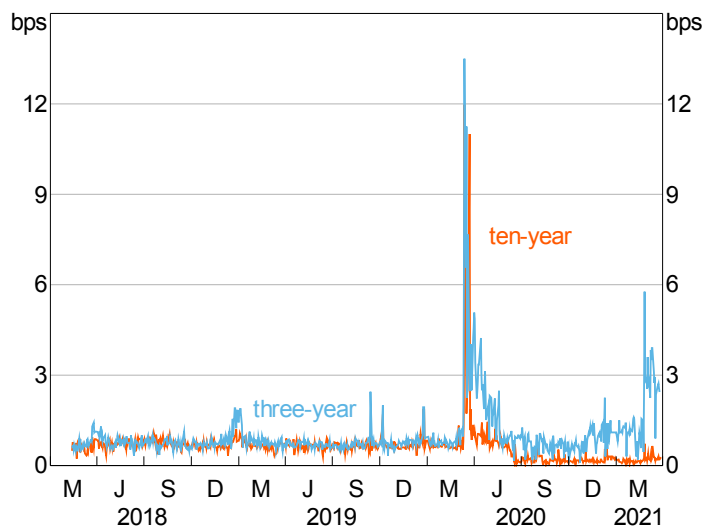
In March and April 2020, as was the case for many other central banks, the RBA bought government bonds in the secondary market to alleviate the dysfunction in the Australian government bond market. These purchases helped to restore the functionality to this important pricing benchmark in the Australian financial system, which serves as the risk-free pricing curve for most financial assets.

The dysfunction was evident in the heightened interest rate volatility in the bond market, reflecting the reduced liquidity even in the US Treasury market. There were wide bid/offer spreads, and bond dealer inventories were large and constrained by capital and

5 Note that there are relatively few bond lines in Australia given the low level of government debt historically. There are no more than one or two lines per annum.

risk considerations. As a result, the Bank bought bonds across the maturity spectrum out to ten years. Since early May 2020, as market conditions improved the RBA ceased purchases for this reason.

FIGURE 6 AGS BID-OFFER SPREADS



Sources: RBA; Yieldbroker.

In November 2020, the Board announced a quantity-based bond purchase programme that is complementary to the three-year yield target. The Board decided to implement this policy for a number of reasons. Longer-term Australian government bond yields were higher than those in other advanced countries. This provided evidence that the size of central bank bond purchase programmes was affecting longer-term yields beyond the anchoring effect of the Bank's three-year yield target. This, in turn, was contributing to a higher exchange rate, which was restraining the recovery in the Australian economy.

The Board opted not to extend the yield target to a longer horizon for a number of reasons. First, the yield target reinforces the Board's forward guidance on the cash rate. Three years is a reasonable horizon over which the Board has some confidence about the economic outlook. Beyond that, the economic outlook is considerably less certain and with it, confidence about the settings of monetary policy. Second, further out along the yield curve, other factors also start to have a greater influence on yields, particularly global developments.

The bond purchase programme announced in November 2020 was for the purchase of \$100 billion in bonds of maturities of around five to ten years over the following six months. It includes bonds of both the Australian and state and territory governments, with \$80 billion allocated to the Australian government and \$20 billion to the state and territory governments. In February 2021 the Board announced an additional \$100 billion

with the same composition and rate of purchase of \$5 billion per week. The bonds are purchased in the secondary market through transparent auctions.⁶ The RBA is carefully monitoring the impact of its bond purchases on the market. It is alert to any sign of dysfunction in the market, and is prepared to adjust the programme if necessary.

TABLE 2 RBA GOVERNMENT BOND PURCHASES FROM MARCH 2020 TO MARCH 2021

	RBA purchases (\$b)	Share of bonds outstanding (%)	% of GDP (%)
AGS	227	29	11
Semis	51	14	3
Total	279	24	14

Note: Includes planned purchases under the \$200 billion bond purchase program, as well as purchases to address market dysfunction and in support of the three-year yield target.

The RBA does not, and will not, directly finance governments. The bonds the RBA owns will be repaid in the same way as if they were owned by other bondholders. While the bond purchases are lowering the cost of finance for governments – as is the case for all borrowers – the Bank is not providing direct finance. There remains a strong separation between monetary and fiscal policy.

FORWARD GUIDANCE

The Bank's policy announcements have provided enhanced forward guidance about the Board's expectations for the future path of monetary policy. The guidance is state-based, with conditions for any future tightening in monetary policy specified in terms of outcomes for inflation and unemployment. The guidance has also evolved in emphasising outcomes rather than forecasts, as had been the case previously. That is, the Board has stated that it will not increase the cash rate until actual inflation is sustainably within the target range. In addition, it has stated this will require a lower rate of unemployment and a return to a tight labour market. While the conditionality is state-based, the Board has provided its thinking as to how long it expects it to be before these conditions are met. In March 2021, it reiterated that it does not expect such conditions to be met until 2024 at the earliest. This reinforces the three-year government bond yield target and has helped underpin the low level of money market and borrowing rates across the economy.

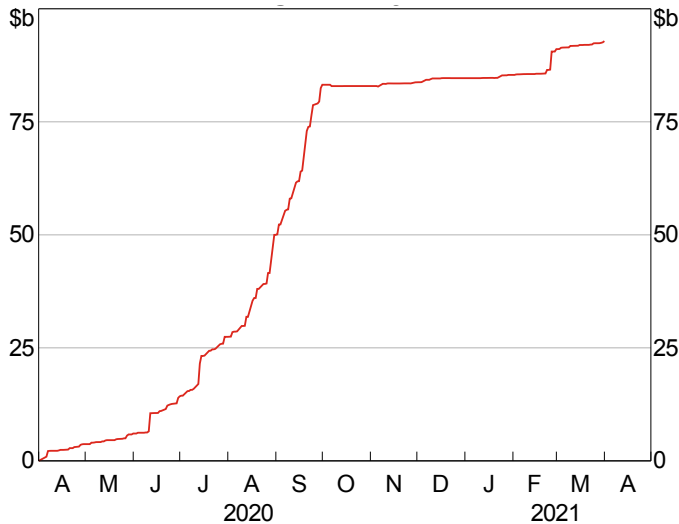
⁶ See www.rba.gov.au/mkt-operations/government-bond-purchases.html

TERM FUNDING FACILITY

The Term Funding Facility provides the banking system with the capacity to borrow from the RBA for three years at cheaper than market rates. It has two main goals. The first is to lower funding costs for the entire banking system so that the cost of credit to households and businesses is low. In this regard, it complements the target for the three-year government bond yield and the forward guidance.

The second objective is to provide an incentive for lenders to support credit to businesses, especially small and medium-sized businesses. Lenders are able to borrow additional funds from the RBA if they increase credit to business since the start of the scheme. For every extra dollar lent to large businesses, lenders will have access to an additional dollar of funding from the RBA. For every extra dollar of loans to small and medium-sized businesses they will have access to an additional five dollars.

FIGURE 7 TERM FUNDING FACILITY DRAWDOWNS*



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

Sources: APRA; RBA.

The TFF was announced in March 2020. Banks were able to borrow up to 3% of their total lending (around \$90 billion) until end-September 2020.⁷ The size and duration of the TFF was extended in September 2020, when an additional 2% could be borrowed until end June 2021. The initial borrowings were at 25 basis points, while from November 2020 the borrowing rate was lowered to ten basis points for new drawdowns. This is materially below the cost of banks obtaining three-year funding in the market.

7 The borrowing is against appropriate collateral, generally mortgage-backed securities that banks hold on their balance sheets (self-securitisations), and with haircuts to provide adequate protection to the RBA.

The RBA has said that it would consider extending this facility if there were a marked deterioration in funding and credit conditions in the Australian financial system.

LIQUIDITY PROVISION

As the dysfunction in markets intensified in March 2020, the RBA responded to the increased demand for liquidity by significantly increasing the supply of liquidity in its daily market operations. This alleviated funding pressures in the banking system and met the increase in precautionary demand for liquidity. (The RBA undertook similar actions in the financial crisis in 2007–08.) Through March and April, the RBA increased the size of its daily operations and provided regular three and six-month terms in its repo operations to meet this demand for liquidity.

As these liquidity operations from March and April matured, they were not rolled over anywhere near one for one. This reflected the improved functioning in financial markets, the ample liquidity in the system and the increased usage of the TFF. As noted, the TFF is a repo at the same price against the same pool of collateral and at a considerably longer maturity than the RBA's normal liquidity operations. Hence it is generally much more attractive to the banking system.

SWAP LINE

The RBA and the US Federal Reserve re-established a temporary swap line of up to US\$60 billion for the provision of US dollar liquidity to help alleviate stresses in the FX swap market, as occurred during the global financial crisis. The US dollars are made available to financial institutions operating in Australia via repos with the RBA, but there have been minimal drawings on the swap line, reflecting the absence of such stresses in the Australian market.

PRUDENTIAL ACTIONS

The RBA does not have responsibility for prudential supervision. That responsibility lies with the prudential regulator, the Australian Prudential Regulation Authority (APRA). However, the RBA works together with other regulatory authorities through the Council of Financial Regulators, which the Governor of the RBA chairs.⁸ APRA has taken a number of prudential actions through the Covid period. These have included the temporary suspension of banks' dividend payments. APRA has also reinforced the message that the capital and liquidity buffers in the banking system are there to be used. The Australian banking system had strong capital and liquidity positions coming into

8 The CFR comprises APRA, the securities regulator ASIC, the RBA and the Treasury.

the pandemic, and hence was able to support the economy. Temporary loan repayment deferrals were instituted early in the pandemic, though they have almost entirely been wound down as the economy has recovered.

INTERACTION WITH FISCAL POLICY

Throughout the pandemic, and particularly in the initial stages, there has been extensive communication between the government and the RBA about the evolving situation and the path ahead. There has been coordinated and supportive messaging about the fiscal and monetary policy response to the pandemic. The responses have had the aligned objective of building a bridge for the economy through the disruption of the pandemic and then supporting demand as the economy recovers from it.

The fiscal policy response has been very large and has been welcomed by the RBA. It has provided substantial support to the incomes of households and businesses, as well as support to aggregate demand through government spending. In addition to conversations between the RBA and the government at senior levels, the Secretary of the Australian Treasury is a member of the Reserve Bank Board, which provides another channel of communication.

CONCLUSION

The monetary policy response in Australia to the pandemic was aimed at ensuring borrowing costs in the economy remain low for households, business and governments, and providing an environment that was supportive of credit growth. The response comprised a number of different but complementary actions. The monetary policy package has worked broadly as expected in supporting the economy. The recovery in the Australian economy has significantly exceeded earlier expectations, but it is likely that significant monetary support will be required for quite some time to come.

ABOUT THE AUTHOR

Dr Guy Debelle commenced as Deputy Governor of the Reserve Bank of Australia in September 2016. Prior to his current role, Dr Debelle was the Assistant Governor (Financial Markets) for ten years. He chaired the Markets Committee of the BIS from 2013-2017, and is the Chair of the Global Foreign Exchange Committee. Dr Debelle has worked at the IMF, BIS, Australian Treasury and as a visiting professor in economics at MIT. He graduated from the University of Adelaide with an honours degree in economics and gained his PhD in economics at MIT.

APPENDIX

Chronology of RBA's support for the economy and financial system in response to Covid-19

<p>3 March 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>Cash rate target reduced from 0.75% to 0.5%. RBA will ensure that the Australian financial system has sufficient liquidity.</p>
<p>16 March 2020 Statement by RBA Governor</p>	<p>The RBA stands ready to purchase Australian government bonds in the secondary market to support the smooth functioning of that market.</p> <p>The RBA will be conducting one-month and three-month repo operations in its daily open market operations to provide liquidity to Australia's financial markets; the RBA will also be conducting longer term repo operations of six months or longer at least weekly as long as market conditions warrant.</p> <p>The RBA will be announcing further policy measures to support the Australian economy on 19 March 2020.</p>
<p>19 March 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>Cash rate target reduced from 0.5% to 0.25%.</p> <p>Forward guidance that the cash rate target will not be increased until progress is being made towards full employment and the RBA is confident that inflation will be sustainably within the 2-3% target band. Given this, it was considered likely that the cash rate would remain at a very low level for an extended period.</p> <p>Interest rate on Exchange Settlement (ES) balances at the RBA reduced from 0.25% to 0.1% (narrowing corridor between RBA's repo lending and deposit rates from 50 basis points to 40 basis points).</p> <p>Introduced target for the three-year Australian Government bond yield of 0.25%. Such a target would also be consistent with the expectation that the cash rate would remain at a very low level for several years.</p> <p>Introduced Term Funding Facility for the banking system, providing at least \$90 billion in three-year funding to authorised deposit-taking institutions (ADIs) at a fixed rate of 0.25%; initial funding of up to 3% of ADIs' existing outstanding credit until the end of September 2020, with access to additional funding until March 2021 if they increase lending to businesses, especially small and medium-sized businesses.</p> <p>Announcement of RBA's policy package timed to coordinate with policy announcements by the Australian Prudential Regulation Authority (that banks can use their large capital buffers to facilitate ongoing lending to the economy) and the Australian Government (the Australian Office of Financial Management will invest \$15 billion in wholesale funding markets used by small ADIs and non-ADI lenders).</p>
<p>20 March 2020</p>	<p>RBA commences purchasing Australian government bonds, purchasing \$5 billion in Australian Government Securities.</p>

<p>20 March 2020 RBA and US Federal Reserve Announce Swap Arrangement</p>	<p>RBA and US Federal Reserve establish a temporary swap line for the provision of US dollar liquidity, allowing the RBA to access up to US\$60 billion in exchange for Australian dollars. The US dollars are made available to financial institutions operating in Australia via repos with the RBA.</p>
<p>22 March 2020 Media Release from Prime Minister and Treasurer</p>	<p>Australian government announces a \$66 billion economic support package.</p>
<p>7 April 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>Open market operations likely to be on a smaller scale in the near term, given the substantial liquidity that was already in the financial system. Operations at longer terms will continue, but the frequency will be adjusted as necessary according to market conditions.</p>
<p>5 May 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>The range of eligible collateral in the RBA's domestic market operations broadened to include Australian dollar securities issued by non-bank corporations with an investment grade credit rating.</p>
<p>1 September 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>The Term Funding Facility increased to around \$200 billion, with ADIs provided access to additional funding equivalent to 2% of their outstanding credit at a fixed rate of 0.25% for three years until the end of June 2021, and access to additional funding associated with increased lending to businesses extended to June 2021.</p>
<p>15 October 2020 Speech by RBA Governor</p>	<p>Forward guidance that the Board will not be increasing the cash rate until actual inflation is sustainably within the target range. The Board does not expect to be increasing the cash rate for at least three years.</p>
<p>3 November 2020 Statement by RBA Governor: Monetary Policy Decision</p>	<p>Cash rate target reduced from 0.25% to 0.1%.</p> <p>Forward guidance that the RBA will not increase the cash rate until actual inflation is sustainably within the 2–3% target range. For this to occur, wages growth will have to be materially higher than it is currently. This will require significant gains in employment and a return to a tight labour market. Given the outlook, the RBA is not expecting to increase the cash rate for at least three years.</p> <p>Interest rate on ES balances at the RBA reduced from 0.1% to 0% (narrowing corridor between RBA's repo lending and deposit rates from 40 basis points to 35 basis points).</p> <p>Target for the three-year Australian Government bond yield reduced from 0.25% to 0.1%.</p> <p>Interest rate on new drawings under Term Funding Facility reduced to 0.1%. Announced bond purchase programme, for the purchase in the secondary market of \$100 billion of bonds issued by the Australian Government and the states and territories, focussing on bonds with maturities of five to ten years, with purchases at a rate of \$5 billion per week over the following six months.</p>

2 February 2021
[Statement by RBA Governor: Monetary Policy Decision](#)

Bond purchase programme extended, with an additional \$100 billion of government bonds to be purchased when the existing program completed in April 2021, at the same rate of \$5 billion per week. **Forward guidance** that the RBA will not increase the cash rate until actual inflation is sustainably within the 2-3% target range. For this to occur, wages growth will have to be materially higher than it is currently. This will require significant gains in employment and a return to a tight labour market. The RBA does not expect these conditions to be met until 2024 at the earliest.

10 March 2021
[Speech by RBA Governor](#)

The Reserve Bank Board agreed that it would not consider removing the **target for the three-year Australian Government bond yield** or changing the target from ten basis points. If the Board were to maintain the April 2024 bond as the target bond, rather than move to the next bond, the maturity of the target would gradually decline over time until the bond finally matures in April 2024.

CHAPTER 3

The Bank of Canada's response in 2020 to the Covid-19 pandemic

Toni Gravelle and Carolyn A. Wilkins
Bank of Canada; formerly Bank of Canada

1 CONTEXT AND MOTIVATION FOR POLICY ACTIONS

The global Covid-19 pandemic was declared by the World Health Organization on 11 March 2020. At that time, people around the globe braced themselves for what would turn out to be a tragic period in which lives were lost and livelihoods were severely disrupted. Fortunately, the Canadian economy heading into the pandemic was healthy, with unemployment near an historic low and inflation close to the 2% target for over a year.

This chapter focuses on the actions taken by the Bank of Canada to address the economic and financial market fallout from the pandemic, consistent with its mandate (Box 1). These actions complemented those taken by governments and regulators at all levels in Canada, as well as many private sector businesses, to build a solid bridge to the other side of the crisis.

BOX 1 THE BANK OF CANADA'S COVID ACTIONS AND MANDATE

Monetary policy: use the monetary policy toolkit to return inflation to 2%. Operational independence to achieve the inflation target is given by the Inflation Control Agreement between the Bank of Canada and the Government of Canada that is renewed every five years.

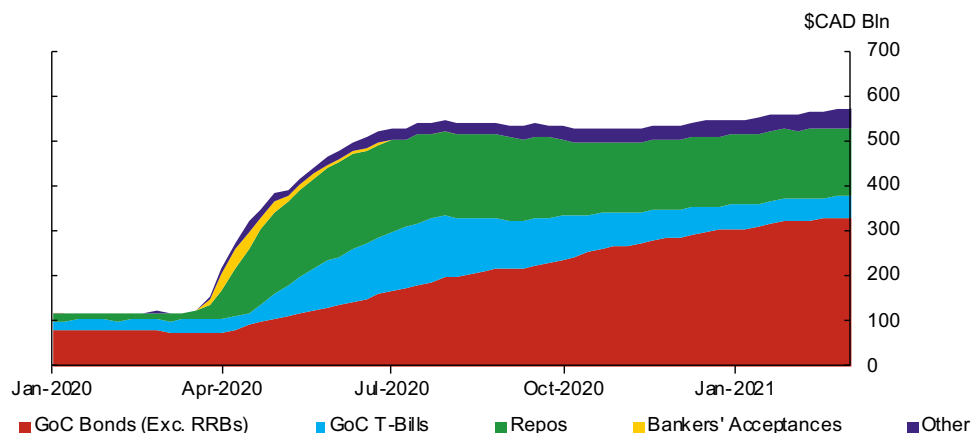
Financial system stability: provide funding or market liquidity if required to support well-functioning core funding markets. The Bank of Canada is the ultimate source of liquidity to the financial system, and serves as the system's **lender of last resort** via the deployment of its routine and emergency liquidity tools. This is also a complement to monetary policy since financial instability interrupts the flow of credit to households and businesses, making monetary policy objectives more difficult to achieve.

The Bank acted quickly to reduce the overnight rate in support of its inflation objective, from 1.75% at the beginning of March 2020 to 0.25% by the end of that month. The Bank also implemented, over a four-week period, 11 programmes designed to support liquidity of core markets that had quickly become severely impaired (Figure 1; see also

Wilkins 2020). These actions took the Bank's balance sheet from around CAD\$120 billion on 3 March 2020, to roughly \$385 billion by the end of April 2020. As of March 2021, the Bank's balance sheet sat at about \$570 billion (Figure 1).

FIGURE 1 BANK OF CANADA BALANCE SHEET

Bank of Canada assets



Notes: In this chart, Government of Canada (GoC) bonds purchased in primary markets are measured at amortized costs. All other bonds, including GoC bonds purchased in secondary markets, are measured at fair value. "All other assets" includes provincial treasury bills and bonds, corporate bonds and commercial paper. A full list of assets can be found on the Bank of Canada's website. Last observation: 12 March 2021.

Source: Bank of Canada.

It is fair to say that the programmes quickly accomplished their objective of restoring good market functioning, and most have been wound down completely. The main programme still in place as of March 2021 was quantitative easing (QE), which is aimed at achieving the inflation target.

The following section outlines the adjustments that the Bank of Canada made to the policy rate of interest and the public statements by its Governing Council on the effective lower bound (ELB). Section 3 discusses the objectives and features of the main programmes that were introduced at the onset of the pandemic, and how they have evolved over the last year. Section 4 reviews the implications of the Bank's actions for its balance sheet. The final section concludes with some issues that merit future research.

2 INTEREST RATE ADJUSTMENTS AND THE EFFECTIVE LOWER BOUND

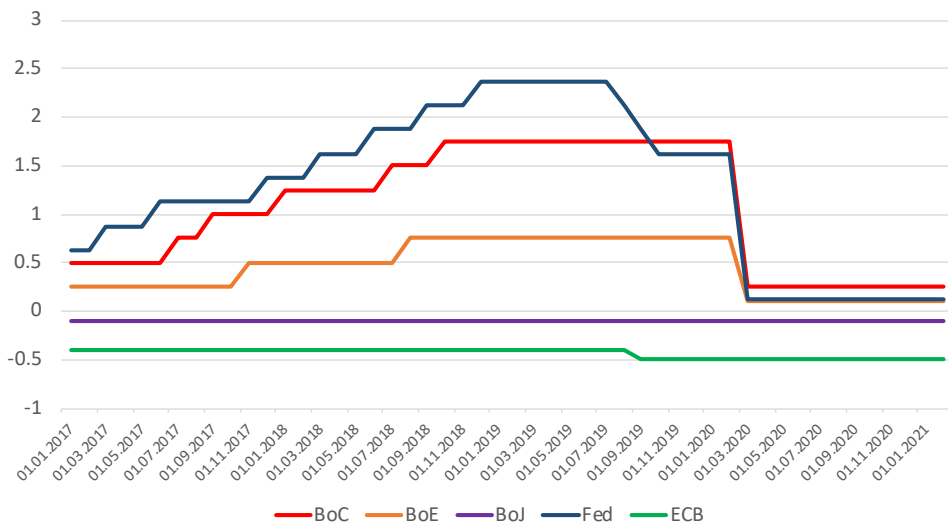
G7 finance ministers and central bank governors committed in a press statement on 3 March 2020 to "use all appropriate policy tools to achieve strong, sustainable growth and safeguard against downside risks" stemming from the Covid-19 pandemic.¹ Consistent

¹ See www.bankofcanada.ca/2020/03/statement-g7-finance-ministers-and-central-bank-governors/

with this, the Bank of Canada lowered the policy interest rate by 50 basis points to 1.25% on its scheduled decision date of 4 March 2020, acknowledging that the outlook for growth and inflation had deteriorated since the beginning of the year. It became clear over a short time the extent to which the spread of the coronavirus, and the necessary measures to contain it, would have serious consequences for households and businesses in Canada and around the world. Canada's economy, as with other commodity-dependent countries, was also suffering from the sharp drop in the prices of energy and other commodities as global demand weakened.

As a result, the Bank lowered the policy rate further to 0.75% on 13 March 2020 and then to 0.25% on 27 March 2020 to provide support to the Canadian economy. This extraordinarily rapid action was judged to be appropriate by the Bank's Governing Council, given the severity of the situation and the considerable uncertainty about the depth and duration of the pandemic. Other major central banks also adjusted their policy rates to the extent that they had the room to manoeuvre (Figure 2).

FIGURE 2 CENTRAL BANK POLICY RATES



The Governing Council made it clear in its policy statement that it considered 0.25% to be effective lower bound on interest rates for this episode.² The concern was that, without clarity that a negative nominal policy rate was 'off the table', the stress already in short-term funding markets would be exacerbated and the incentives for financial

2 See www.bankofcanada.ca/2020/03/press-release-2020-03-27/

institutions to extend credit would be dampened.³ This concern was reassessed early in the summer of 2020 once funding market conditions had substantially improved. Ultimately, the Governing Council decided that a well-designed QE programme would be a more powerful tool to stimulate demand and achieve the inflation objective (see the discussion in Section 3). That said, the Bank said in the autumn that it would retain the option of moving to a lower, but still positive policy rate should the economy face another sharp contraction in activity.

In terms of communication, the Bank typically only provides indirect forward guidance with regards to the policy rate but would use explicit forward guidance as a tool in extraordinary circumstances to reinforce its policy actions. The Bank kept to its usual practice in the initial months of the crisis, given the extreme uncertainty around the economic outlook. In fact, the April 2020 Monetary Policy Report presented possible economic scenarios rather than a modal forecast. Explicit contingent forward guidance was introduced in July, when the Bank offered a central scenario for the outlook. By October, it had returned to providing a base-case projection for growth and inflation upon which to anchor its policy actions. The explicit forward guidance was conditional on measures of excess economic capacity, and inflation would be sustainably back to target. This guidance as of March 2021 stated: “We remain committed to holding the policy rate at the effective lower bound until economic slack is absorbed so that the 2 percent inflation target is sustainably achieved. In the Bank’s January projection, this does not happen until into 2023.”⁴

3 EXTRAORDINARY OPERATIONS, FACILITIES, AND PROGRAMMES

It was clear even prior to the declaration of the global pandemic that adjustments in the policy rate would need to be supported by other programmes to reduce the mounting stress in core funding markets. The Bank’s efforts were designed to help governments, businesses, and households access funding from markets and financial institutions to deal with the pandemic. Without properly functioning markets, monetary policy objectives would be more difficult to achieve, and economic hardship risked being even more profound.

Some of the clearest signs of stress were in government bond markets, which are normally the most robust. In periods of severe financial market stress, there is typically a ‘flight-to-quality’ dynamic that takes hold whereby investors rush to the safest financial instruments, primarily benchmark sovereign bonds (e.g. Government of Canada bonds). During the height of the panic in financial markets in March 2020, this did not occur.

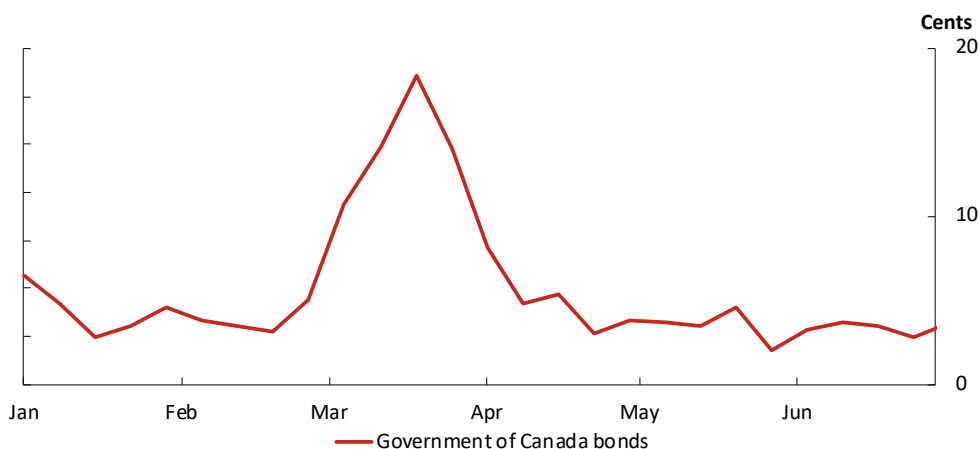
3 More generally, research at the Bank has found that the nominal policy rate could, in principle, fall to between -50 and -75 basis points before risking unproductive distortions such as a flight to bank notes (Witmer and Yang 2016). In addition, major financial institutions in Canada have the systems in place to deal with negative nominal interest rates, though it is unclear whether they would deploy negative rates to retail clients.

4 See www.bankofcanada.ca/2021/03/fad-press-release-2021-03-10/

In fact, there was a notable degree of dysfunction in the Government of Canada bond market. For instance, bid-ask spreads in the benchmark Government of Canada bonds rose significantly (Figure 3).

FIGURE 3 THE COST OF TRADING ROSE FOR GOVERNMENT OF CANADA

Weekly median of daily data



Note: Last observation: June 30, 2020.

Sources: Canadian Depository for Securities and Bank of Canada calculations.

The market for commercial paper, bankers' acceptances, and provincial money market instruments also showed acute stress, even freezing at times. This disruption occurred very quickly, as market participants sought cash to shore up precautionary balances, meet margin calls and unwind positions. Businesses also drew on their committed lines of credit and increased borrowing, which amounted to an increase between January and March 2020 of nearly \$200 billion among Canada's six largest commercial banks.

Given the situation, the Bank chose to quickly implement a number of different programmes, each designed to target a specific issue in core markets. These programmes fell under three operational categories and are summarised in Table 1.

1. **Funding liquidity facilities.** The main source of funding liquidity provided to major financial institutions early in the crisis was the regular term repo facility, which is available to primary dealers through an auction process.⁵ As in the global financial crisis, this facility was enhanced in several ways. The frequency increased from bi-weekly to twice per week. The tender amounts were increased from a roughly \$1 to \$3 billion range to up to \$24 billion at their peak. The range of eligible collateral was expanded considerably, and the tenor of the term repo operations was

5 The regular term repo facility is active in normal course to manage the Bank's balance sheet (see www.bankofcanada.ca/2019/08/bank-canada-balance-sheet/).

initially extended to include terms of six, nine and 12 months from the standard one and three months only. At the end of April, the tenors of the term of the operations were further extended to include terms of 18 and 24 months.

The Contingent Term Repo Facility (CTRF) was activated to complement the enhanced term repo operations, by providing liquidity on a standing, bilateral basis to eligible counterparties beyond primary dealers (e.g. pension funds that are active in Canadian dollar repo markets). This facility was like one deployed by the Bank during the global financial crisis. A Standing Term Liquidity Facility (STLF) was also introduced to provide collateralised loans to individual deposit taking institutions (e.g. banks). This newly created facility offered one-month loans at 75 basis points above the corresponding overnight index swap (OIS) rate against a broad set of collateral, including mortgages. The tenor of the STLF was extended to three months at the end of April 2020 and has since reverted to a one-month term.

The enhanced term repo facility was the most actively used facility because banks and their broker-dealers are central to the provision of funding and market liquidity in core fixed-income markets. As is the case in most major financial markets, these entities are best placed to pass along the funding they received from the Bank of Canada to the broader financial system. As markets improved over the spring and summer, the Bank began unwinding the enhancements to the term repo facility (see the table in the Appendix). The CTRF and STLF were little used (see Table 1 for peak Bank of Canada holdings), primarily because funding market conditions improved very quickly, and the pricing and terms of these facilities meant regular market sources of funding became more favourable.⁶

The Bank also announced that it would set up a US dollar repo facility, along with other jurisdictions. It was not activated, as Canadian financial institutions were able to satisfy their US dollar needs directly (e.g. via their US based subsidiaries and affiliates).

- 2. Money market purchases.** The enhanced term repo operations went a long way to easing funding pressures at major banking institutions, but there was nonetheless a need to improve conditions in other core short-term funding markets for governments and both financial and non-financial businesses. The Bank introduced additional purchase facilities to directly improve conditions in these markets. This group of facilities involved outright purchases of short-term money market instruments that would be held to maturity.

6 To help mitigate the possible stigma associated with using the SLTF, the Canadian Bankers Association issued a press release stating that nine banks had drawn on the facility (see <https://cba.ca/statement-from-cba-on-bank-of-canada-standing-term-liquidity-facility?l=en-us>) and the Bank responded with its own statement welcoming its use (see www.bankofcanada.ca/2020/03/bank-canada-welcomes-use-new-liquidity-facility-financial-institutions/).

TABLE 1 MAIN PROGRAMMES IN THE BANK OF CANADA'S COVID RESPONSE

	Current holdings (\$ millions) 18 March 2021	Maximum holdings (\$ millions)	Main features	Objectives
Liquidity facilities				
Extended Term Repo	134,000	212,000	<ul style="list-style-type: none"> - offered term funding against an expanded range of collateral - terms out to 24 months, broad range of eligible collateral - access limit to primary dealers" 	Provide significant amounts of shorter-term secured funding to the Canadian banking system.
Contingent Term Repo Facilities	0	270	<ul style="list-style-type: none"> - offered 1-month term funding to eligible counterparties on a standing, bilateral basis - eligible collateral composed of securities issued or guaranteed by Government of Canada or a provincial government - counterparties are financial market participants that can demonstrate significant activity in the Canadian dollar money markets or fixed income markets" 	Provide secured short-term funding to non-bank financial institutions.
STLF	0	9,900	<ul style="list-style-type: none"> - a standing facility providing collateralized loans to prudentially regulated members of the payments system - available to counterparties for which the Bank has no concern about financial soundness - broad range of eligible collateral, including residential mortgages" 	Provide a standing, bilateral funding facility to provide counterparties with collateralized loans.
USD repo			Never launched	Provide collateralised USD funding, leveraging bilateral central bank swap facility

	Current holdings (\$ millions) 18 March 2021	Maximum holdings (\$ millions)	Main features	Objectives
Money market purchases				
Incremental Government of Canada T-Bills purchases	13,040	62,400	"- Bank of Canada purchases at primary market auctions increased from a maximum of 25% to 40% of issuance. - priced at average yield at auction"	To support continued liquidity and efficient functioning of the federal government's treasury bill program.
Provincial Money Market Program	2,200	7,800	"- Bank of Canada purchased up to 40% of each offering of directly-issued provincial money market securities. - price based on auction yields"	To support the liquidity and efficient functioning of provincial government funding markets.
Commercial Paper Purchase Program	0	3,000	"- program purchases CP, including ABCP, in the primary and secondary market. Tenors can be up to 3 months. - issuers must be of sufficiently high quality, roughly equivalent to a minimum rating of R-1 (h/n/l) - initial duration of 12 months - pricing based on a fixed spread over OIS. spread is adjusted daily"	The commercial paper purchase program supports the flow of credit to the economy by alleviating strains in Canada's CP markets.
Bankers' Acceptances Purchase Facility	0	39,600	"- program structured as a reverse auction with a reserve rate - participation open to primary dealers"	To support the liquidity and proper functioning of the BA market, which is a key source of financing for small- and medium-size corporate borrowers.
Bond purchases				
Government of Canada Bond Purchase Program	226,000	226,000	"- Bank purchases a minimum amount of Government of Canada bonds (both nominal and real) across various maturity sectors in the secondary market via reverse auction. - program was initially sized at a minimum of \$5 billion par value per week but has been adjusted lower. - eligible counterparties are primary dealers"	Purchases of Government of Canada nominal and real return bonds in the secondary market are conducted to support market functioning and provide monetary stimulus. The program was established to address strains in the government bond markets, but as market conditions improved, the focus has shifted to providing monetary stimulus.

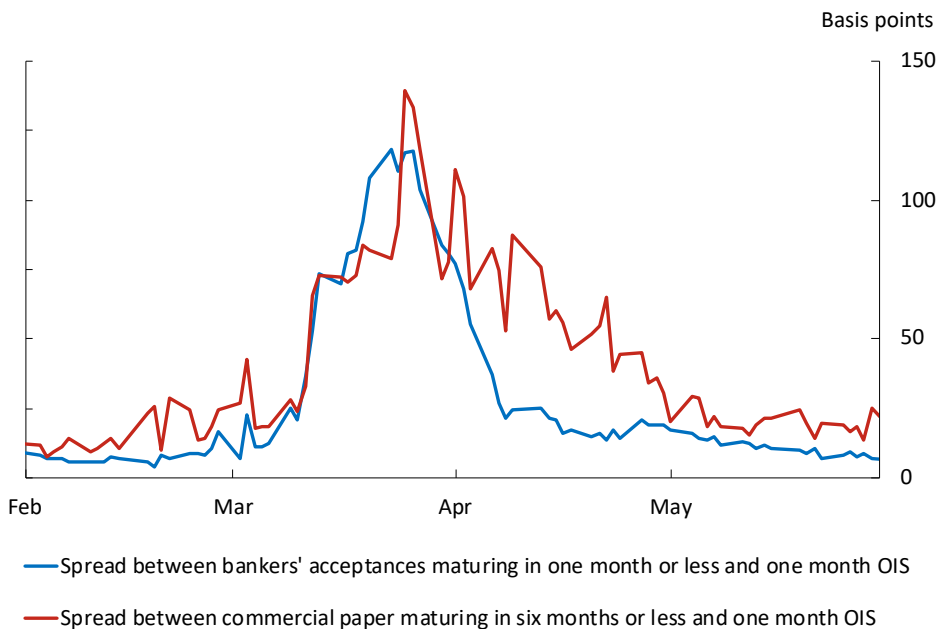
	Current holdings (\$ millions) 18 March 2021	Maximum holdings (\$ millions)	Main features	Objectives
Provincial Bond Purchase Program	17,000	17,000	<ul style="list-style-type: none"> - Program conducted secondary market purchases through competitive tenders - purchases aimed to reflect a reference portfolio based in equal weigh on each province's share of eligible bonds outstanding and their share of Canadian GDP - Maximum size of \$50 billion in eligible assets - eligible counterparties are primary dealers" 	Support the liquidity and efficiency of provincial government funding markets.
Canada Mortgage Bond Purchase Program	8,000	8,000	<ul style="list-style-type: none"> - Bank targeted purchases of up to \$500 million per week of Canada Mortgage Bonds in the secondary market. - priced via reverse auction - eligible counterparties are primary dealers" 	To provide support to the Canada Mortgage Bond market and thereby support mortgage lending.
Corporate Bond Purchase Program	200	200	<ul style="list-style-type: none"> - Purchases conducted through a tender offer process with prices based on current market - purchases aim to reflect a reference portfolio based on the sectoral shares of eligible assets outstanding - maximum total program size of \$10 billion par value - program duration of one year from launch - participation initially restricted to primary dealers, but subsequently expanded to buy-side accounts" 	To support the liquidity and proper functioning of the corporate debt market by purchasing bonds through a tender process in the secondary market.

Primary dealers, who make markets in these instruments, were subject to massively increases in government Treasury Bills (T-Bill) issuance to fund necessary emergency fiscal spending plans. These dealers also saw a sharp and rapid rise in sales of these instruments by institutional investors. Institutional sales included federal and provincial government T-Bills, Bankers' Acceptances (BAs) and Commercial Paper (CP). Money market funds sold T-Bills and other money market instruments to meet redemption demands. Other asset managers, such as hedge funds, insurers, and pension funds became sellers of BAs, CP and other money market instruments to build up cash buffers or meet margin calls from derivatives positions.

While banks initially issued BAs to fund draws on credit lines from their commercial clients, they were forced to switch to other forms of funding (e.g. term repos) as the BA market came under stress. As a result, broker-dealers quickly tapped out their capacity to absorb these instruments onto their balance sheet (i.e. they hit risk limits), constraining their capacity to make markets. This led to sharp increases in the interest rate on most money market instruments (Figure 4). By purchasing these securities through an auction process, the Bank of Canada was able to relax dealer balance sheet constraints so that they could more easily make markets, and satisfy the heightened demand for cash coming from institutional investors.

FIGURE 4 MONEY MARKET SPREADS

Daily data



Notes: OIS is overnight index swap. Last observation: June 30, 2020.

Source: Market Trade Reporting System 2.0, Bloomberg and Bank of Canada calculations.

The BA Purchase Program (BAPP) was heavily used in its initial months, peaking at roughly \$40 billion in holdings on the Bank of Canada's balance sheet. Purchases declined quickly as markets improved, and by late July the last of the Bank's holdings of BAs had matured. The programme was also priced (+20 basis points over comparable market rate) so that it would naturally wind down as markets improved and was discontinued in October 2020. Similarly, the CP Purchase Program (CPPP) was initially active as that market had essentially frozen during the March period. The CP market returned quickly to normal after the Bank of Canada announced the CPPP (see Appendix for announcement dates of all programs). Once market funding rates improved to a point where they were below the CPPP's reserve rate, activity fell to zero; CP holdings peaked at roughly \$3 billion, with all of it having rolled off the Bank's balance sheet by July 2020. A similar dynamic was at play for provincial T-Bills, where the programme was discontinued in October 2020, with the Bank's holdings rolling off by the end of September 2021.

- 3. Bond purchases.** Bond markets also came under considerable pressure, including the Government of Canada bond market. These debt securities are considered very safe and serve as the benchmark, or reference rate, for almost every other credit market. If this market is not functioning smoothly, the rest of the financial system – and the economy – comes under stress as well.

To restore market functioning, the Bank began the Government of Canada Bond Purchase Program (GBPP) in early April 2020. This QE programme initially purchased a minimum of \$5 billion bonds per week across the whole of the yield curve, to improve liquidity at every tenor.⁷ As market functioning improved, the main objective of these purchases shifted to bolstering the Bank's monetary policy stimulus through several channels.⁸ In particular, once proper market functioning was restored, the QE purchases started putting downwards pressure on the benchmark yield curve via the interest rate channel. Overall borrowing costs for households, businesses, and governments were lowered by a combination of self-reinforcing effects; both the interest rate and portfolio balance channels were spurred by the combination of QE, the lower policy rate, and explicit forward guidance. The goal was to have the stimulative impact needed to get the economic recovery sustainably underway, people back to work, and achieve the Bank's inflation target.

Canadian corporate and provincial bond markets also came under stress, with little or no activity in the early weeks of the crisis. The Bank launched two additional purchase programs to support these important markets.

7 Prior to implementing QE in early April 2020, the Bank had been conducting, as fiscal agent, switch operations to buy back off-the-run government of Canada bonds while issuing on-the-run bond in order to help primary dealers manage their balance sheet. This type of operation is part of the Bank's regular toolkit as fiscal agent for the federal government's debt management activities (see www.bankofcanada.ca/2020/03/expansion-bond-buyback-term-repo/).

8 For more detail on the different channels that QE works through, see Bank of Canada (2020).

The main parameters of the Provincial Bond Purchase Program (PBPP) and the Corporate Bond Purchase Program (CBPP) included purchase limits of up to \$50 billion and \$10 billion, respectively. Given that the purpose was to improve market functioning, the programme limited purchases to secondary markets and had a planned end date of one year. As with the programmes for monetary market instruments, purchases slowed considerably once market conditions improved. In fact, holdings at the end of March 2021 were roughly \$17 billion for provincial bonds and \$200 million for corporate bonds.

Each of the facilities was developed with full consideration of the following:

- *Financial risks.* While these programmes inherently involve taking financial risk, mitigation mechanisms were put in place to prudently manage the risk. For instance, the terms repos and loans were conducted against high-quality collateral with appropriate haircuts. The corporate paper and bond purchase programmes were only available for high-quality borrowers and for limited tenors (five years and under).⁹ The provincial bond purchase program also has a limit on tenor (only bonds maturing on or before 15 April 2031).¹⁰
- *Central bank independence.* Every programme is implemented in a manner that is consistent with the Bank's Inflation Control Agreement with the Government of Canada. To reinforce this, the programmes that involve meaningful risk of financial loss have indemnities from the federal government.¹¹ Given these indemnities, any mark-to-market realised gains or losses are offset by amount due from (or owed to) the federal government. The Bank will remit any realised gains to the government, while the government will reimburse the Bank for realized losses. Along with prudent risk management, this reinforces the independence of the central bank to take actions to achieve the 2% inflation objective and is akin to the operational independence that the Bank has with respect to the overnight rate.
- *Transparency.* Central bank independence is also reinforced by transparency of the operations that are conducted. The Bank has clearly and proactively reported on its website of the policies, the planned operations, and the outcomes of the operations.¹² The Bank also committed to publish transaction-level detail once programmes were wound up, or with a five-year lag.

9 Eligible assets for purchase will have at least one rating of BBB Mid/BBB/Baa2 or higher for the senior unsecured rating or long-term foreign issuer credit rating assigned by any of DBRS Morningstar, Standard & Poor's, Moody's Investors Service, and Fitch Ratings, as of 15 April 2020. For full eligibility requirements, see www.bankofcanada.ca/markets/market-operations-liquidity-provision/market-operations-programs-and-facilities/corporate-bond-purchase-program/

10 For terms and conditions details, see www.bankofcanada.ca/markets/market-operations-liquidity-provision/market-operations-programs-and-facilities/provincial-bond-purchase-program/

11 Indemnity agreements with the Government of Canada were entered into to address both realized mark-to-market gains and losses for the Government of Canada, Provincial and Corporate Bond Programs. Realized credit losses are also indemnified for the Commercial Paper and Corporate Bond Programs. See the Bank of Canada's quarterly financial reports for more details (www.bankofcanada.ca/markets/market-operations-liquidity-provision/market-operations-programs-and-facilities/provincial-bond-purchase-program/)

12 See www.bankofcanada.ca/markets/market-operations-liquidity-provision/covid-19-actions-support-economy-financial-system/

- *Exit strategy.* No programme was implemented without an understanding of how the exit might be accomplished. With regards to the first two categories of facilities, the exit was built into the pricing, was achieved through policy decisions to scale back, or had a fixed termination date. The corporate and provincial bond purchase programmes had fixed maximum purchase amounts and planned end dates (one year from implementation).

With regards to QE, the Bank was clear from the start that the programme would be adjusted based on the strength of the economic recovery. During the asset accumulation phase of QE (with a minimum \$4 billion purchased per week in place as of March 2021), the Bank's level of bond holdings continues to grow. The Bank has indicated that as Governing Council continues to gain confidence in the strength of the recovery, it would gradually adjust the pace of purchases. The Bank's Governing Council expressed the view that any moderation of the pace of bond purchases, while growing its QE holdings, still *adds* monetary stimulus, albeit at a slower pace.

As the Bank gradually reduces back the amount of incremental QE stimulus, it will eventually reach a pace of purchases that *maintains*, but no longer increases, the amount of stimulus being provided – that is, a pace where the Bank's bond holdings are largely stable, and the proceeds of any maturing assets are reinvested.

Importantly, the Bank has been clear that the pace of QE purchases would not necessarily signal a change in the Governing Council's views about when the policy rate would start rising. Decisions to adjust the pace of QE and to change the policy rate are distinct, with policy rate changes tied to the forward guidance. This implies that the reinvestment phase of QE would happen sometime before lift-off occurs.

4 BALANCE SHEET IMPLICATIONS

The concerted deployment and strong usage of the Bank's facilities to stabilise funding markets and the economy are reflected in the evolution of its balance sheet. In the first six weeks of the rollout, when stabilisation of core funding markets was the priority, the Bank's balance sheet expanded from \$120 billion to roughly \$385 billion, more than a threefold increase (Figure 1). The initial increase was largely driven by the term repos, which expanded the Bank's balance sheet by about \$175 billion over that period. Incremental Government of Canada T-bill purchases were the second most significant part of the Bank's interventions, with peak holdings of \$140 billion at the end of July 2020. As discussed above, purchases of BAs, CP and provincial T-bills added to the balance sheet, but to a lesser extent (see Table 1 for peak holdings). Note, the Bank was already holding roughly \$80 billion in Government of Canada bonds going into the crisis period. They are held for normal balance sheet management purposes, as a passive offset to growing currency in circulation.

The growth in assets during the height of the crisis period and afterwards was funded by an increase in settlement balances, which are remunerated at the deposit rate.¹³ For these interventions to provide support to market functioning, dealers' balance sheet constraints needed to be relaxed to provide them leeway to hold a greater amount of assets (central bank liabilities in the form of settlement balances). The Office of the Superintendent of Financial Institutions (OSFI), Canada's banking regulator, made the necessary adjustments to the leverage ratio to exclude federal government bonds and central bank settlement balances.¹⁴

While the size of the balance sheet had grown relatively little since mid-summer 2020, its composition had changed considerably in terms of average tenor of the assets. Assets under one year comprised over 70% of the total at the end of April 2020. This shifted to only around 30% roughly at the end of March 2021. This occurred because the Bank altered its emphasis from market functioning to monetary policy. As a result, the average tenor of the Government of Canada bond holdings rose from around six years last summer to over seven years in February.¹⁵

The ramp-up of the Bank of Canada's QE programme was rapid relative to other central banks. Purchases from March 2020 until mid-March 2021, however, are roughly in line, as a share of GDP, as those made by the US Federal Reserve and the Bank of England (Figure 5). The overall size of the Bank of Canada's balance sheet as a share of GDP is nonetheless smaller than the Fed and the Bank of England, given a much lower starting point.¹⁶

The Bank's deployment of facilities aimed at market functioning caused a rapid growth of the Bank's balance sheet during the most acute part of the crisis last year, roughly from March to the end of June. But by the mid-March 2021, Government of Canada bond holdings had become the largest component of assets by far – at roughly \$350 billion, or roughly 70% of total assets. Moreover, measured as a share of total government bonds outstanding, Bank of Canada holdings are higher than the US and the euro area (Figure 6).

The remaining assets held on the Bank's balance sheet that arose out of programs directed at market functioning will continue to roll off from levels posted in March 2021, as they have been deactivated or shutdown (Gravelle 2021). For example, term repos sat at roughly \$150 billion on the Bank's balance sheet at the beginning of March 2021, with \$120 billion of that amount maturing by the end of April 2021.

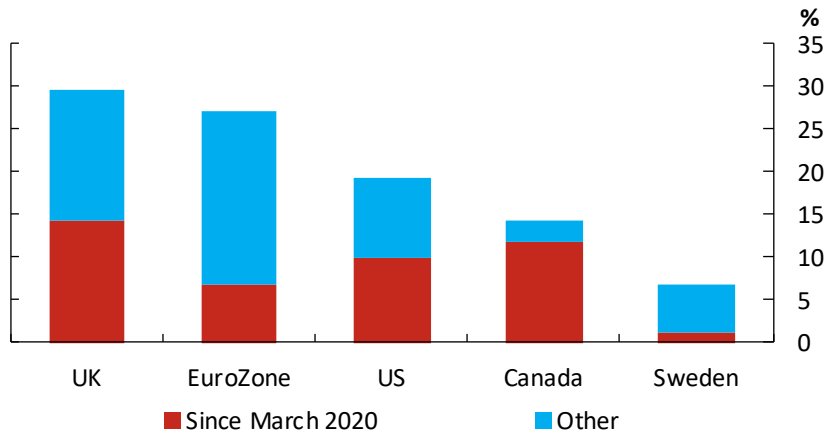
13 The Bank also shifted from a corridor system in terms of monetary policy implementation to a floor system given the need to fund the extraordinary actions and QE with settlement balances. This led to a shift in implementation whereby that deposit rate for settlement balances was set to equal the policy rate as of 23 March (see www.bankofcanada.ca/2020/03/bank-of-canada-announces-additional-measures-to-support-market-functioning/).

14 This change was mirrored in most other jurisdictions that follow Basel III rules.

15 The Government of Canada bonds that were purchased in secondary market are accounted for at fair value because they are available for sale, commensurate with one potential lever to achieve the inflation objective. The same accounting treatment applies to provincial and corporate bonds, for the same reason.

16 The Bank of Canada typically runs with a relatively small balance sheet, given that the large value transfer system is set up to run with very low settlement balances in normal times and the Bank had never deployed QE or other large scale asset purchases prior to the Covid-19 pandemic.

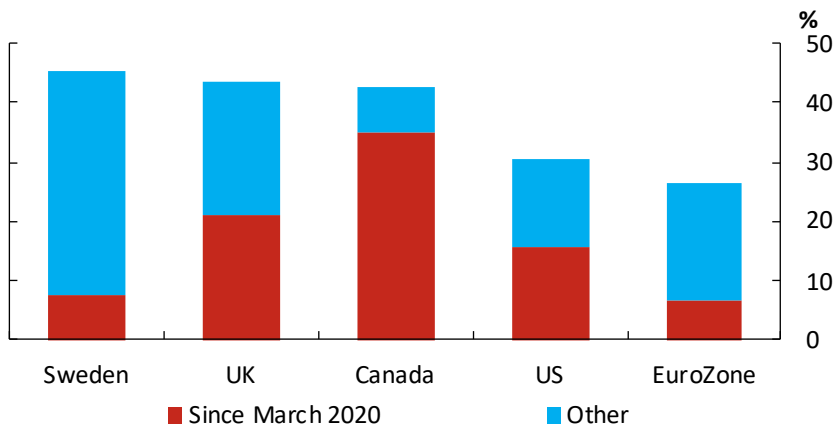
FIGURE 5 GOVERNMENT BOND PURCHASES AS A SHARE OF 2020Q1 ANNUALISED GROSS DOMESTIC PRODUCT



Notes: All nominal sovereign bond purchases include purchases at primary auctions for balance sheet management. Note that the last observation for the euro area is January 21, 2021. Data for Sweden and the euro area may also include inflation-protected securities. Purchases from March 2020 include primary and secondary market purchases. Last observation: March 16, 2021.

Source: Bank of England, European Central Bank, US Federal Reserve Bank, Bank of Canada, Sveriges Riksbank and Bloomberg.

FIGURE 6 HOLDINGS OF GOVERNMENT BONDS AS A SHARE OF TOTAL GOVERNMENT BONDS OUTSTANDING



Notes: All nominal sovereign bond purchases include purchases at primary auctions for balance sheet management. Note that the last observation for the euro area purchases is January 21, 2021. Data for Sweden and the euro area may also include inflation-protected securities. Last observation for government bonds outstanding is February 2021, except for the euro area, which is as of 2020Q3. Last observation: for purchases March 16, 2021; for outstanding, February 2021.

Source: Bank of England, European Central Bank, US Federal Reserve Bank, Bank of Canada, Sveriges Riksbank and Bloomberg.

5 LESSONS LEARNED SO FAR AND ISSUES THAT MERIT FURTHER RESEARCH

The Bank's actions to do what it could within its mandate to mitigate the worst of the fallout of the Covid-19 pandemic were decisive and have been effective in supporting the economic recovery. This outcome is a shared success because:

- Advance policy work between the federal Department of Finance and the Bank in the context of the Inflation Control Agreement to develop the Bank's extended monetary policy toolkit, as well as contingency planning with other federal partners (e.g. the OSFI), supported efficient collaboration and well-considered responses under tight timelines.
- Significant investments in prior years in operational resilience allowed the relevant institutions, including the Bank of Canada, to respond quickly while at the same time moving to almost complete telework. For instance, the Bank had just opened and staffed its second site for market and banking operations in Calgary, which allowed it to scale up its operations swiftly. Investments in IT infrastructure also meant that more of the operations and processing were automated. This should not take away from acknowledging the sheer force of the collective efforts made by Bank of Canada staff, as well as its public and private-sector partners.
- The implementation of many of the financial-sector reforms following the global financial crisis meant that financial institutions in Canada and in other jurisdictions had more and better-quality capital, were abiding by the leverage constraints, and had liquidity reserves at the onset of Covid. Because of this, central bank actions worked more efficiently than they would have otherwise to restore market functioning. And, unlike during the global financial crisis, financial institutions were able to help support the recovery, once the worst of the initial market-wide stresses had subsided.¹⁷ That being said, the crisis uncovered several areas of risk that will need the attention of domestic and international authorities.¹⁸

There are undoubtedly many lessons for central banks, and to draw them out we will need a constructive postmortem on what went well, and what might be done better next time. Many of the facilities were used for the first time in Canada and so there is a lot to learn from future research in several areas:

- **Risk-reward:** How efficient were the different facilities, individually and collectively, in restoring market function and stimulating the economy when weighed against the financial and other risks incurred? What changes, if any, could improve the risk-reward trade-off?

¹⁷ Aside from continuing to lend, many FIs allowed deferral of loan payments among other actions to help support the economy.

¹⁸ For more on this see FSB workplan (www.fsb.org/2021/01/fsb-work-programme-for-2021/).

- **Inequality:** What are the overall implications of QE and other large scale asset purchases for the distribution of income and wealth? Clearly Covid hit women and the most vulnerable the hardest, which makes stabilising the economy and supporting a recovery in the job market particularly important. That said, it is also important to determine if the means have implications for inequality through other channels (e.g. asset prices).
- **Optimal policy mix:** When heading into a crisis, it is usually clear that all hands are needed on deck to move forward in the same direction. As the crisis clears and the recovery phase is underway, important questions arise with regards to trade-offs between financial stability and growth, particularly in the context of high levels of debt and potential overheating in some housing markets. What are the best strategies to combine fiscal, monetary and macro-prudential policies over the cycle to navigate these trade-offs?

It is critical that the Bank of Canada, and central banks around the globe, do this work to retain the public's confidence in central bank inflation and financial stability mandates.

REFERENCES

Bank of Canada (2020), *Monetary Policy Tools*, Monetary Policy Report July 2020 (<https://www.bankofcanada.ca/wp-content/uploads/2020/07/mpr-2020-07-15.pdf>)

Gravelle, T (2021), "Market stress relief: the role of the Bank of Canada's balance sheet", remarks at the CFA Society Toronto, 23 March (via webcast) (www.bankofcanada.ca/wp-content/uploads/2021/03/remarks-2021-03-23.pdf).

Wilkins, C A (2020), "Bridge to Recovery: The Bank's COVID-19 Pandemic Response", remarks delivered virtually at the C.D. Howe Institute, 4 May (www.bankofcanada.ca/2020/05/bridge-recovery-banks-covid-19-pandemic-response).

ABOUT THE AUTHORS

Toni Gravelle was appointed Deputy Governor of the Bank of Canada, effective 1 October 2019. In this capacity, he is one of two deputy governors responsible for overseeing the Bank's financial system activities and is responsible for the Financial Markets Department (FMD). As a member of the Bank's Governing Council, he shares responsibility for decisions with respect to monetary policy and financial system stability, and for setting the strategic direction of the Bank.

He first joined the Bank in 1996 and went on to hold various positions within Financial Markets and Stability departments. In 2013 he was seconded to Finance Canada. He returned to the Bank in 2015 upon his appointment as Managing Director of FMD.

In addition to his extensive experience with Canada's financial sector and research at the Bank, Mr. Gravelle was an economist at the International Monetary Fund (IMF) from 2002 to 2005, participating in the financial system stability assessments of France and Senegal and contributing to the IMF's semi-annual *Global Financial Stability Report*.

Mr. Gravelle holds a Ph.D. in Economics from Western University.

Carolyn A. Wilkins was recently appointed to the Bank of England's Financial Policy Committee as an external member (starting June 2021). She is a member of the Board of Directors of Intact Financial Corporation, the largest provider of property and casualty insurance in Canada and a leading provider of specialty insurance in North America.

Prior to this appointment, Ms. Wilkins had a distinguished twenty-year career at the Bank of Canada, serving as Senior Deputy Governor from 2014 to 2020, setting monetary and financial system policies with Governing Council, and overseeing strategic planning and economic research. Ms. Wilkins led the development of the Bank's market liquidity facilities and large-scale asset purchase program as part of its COVID-19 response. She has made important contributions to international financial policies over her career, most recently as the Bank of Canada's G20 and G7 Deputy and member of the Financial Stability Board. Ms. Wilkins has published and spoken on a broad range of international issues, including economic resilience, global financial regulation, and Fintech.

APPENDIX

Programme	Announcement date	First operation date	Discontinuation date	Change date	Changes
Government of Canada Bond Purchase Program (GBPP)	27-Mar-20	1-Apr-20	Monetary Policy Tool	28-Oct-20	Recalibrated purchases
Incremental T-Bill Purchases	15-Apr-20	16-Apr-20	27 July 2020 (announced July 21)	24-Nov-20 21-Sep-20 27-Jul-20	Reduced purchases to 0-10 percent of tendered amounts Reduced purchases to 10% of tendered amounts Incremental ended: Reduced purchases to 20% of tendered amounts
Canada Mortgage Bond Purchases (CMBP)	16-Mar-20	17-Mar-20	26 October 2020 (announced Oct 15)		
Bankers' Acceptance Purchase Facility (BAPF)	13-Mar-20	23-Mar-20	26 October 2020 (announced Oct 15)	6-Jul-20	Frequency reduced from weekly to bi-weekly
Provincial Money Market Purchase Program (PMMP)	24-Mar-20	25-Mar-20	16 November 2020 (announced Nov 9)		
Provincial Bond Purchase Program (PBPP)	15-Apr-20	7-May-20	7 May 2021 (announced Mar 23)		
Commercial Paper Purchase Program (CPPP)	27-Mar-20	2-Apr-20	2 April 2021 (announced Mar 23)		
Corporate Bond Purchase Program (CBPP)	15-Apr-20	26-May-20	26 May 2021 (announced Mar 23)	6-Oct-20	Allowed buy-side participants to offer bonds into the program
Expanded Term Repos	12-Mar-20	17-Mar-20	4 May 2021 (announced Mar 23)	21-Oct-20 16-Jun-20 21-Apr-20	Reverted to bi-weekly schedule and reduced eligible collateral to pre-covid requirements Reduced frequency from twice to once per week and removed LVTS members' BAs & BDNs from eligible collateral Revised to include terms of up to 24 months
Contingent Term Repo Facility (CTRF)	20-Mar-20	8-Apr-20	6 April 2021 (announced Mar 23)		
Standing Term Liquidity Facility (STLF)	19-Mar-20	30-Mar-20	Permanent Facility	9-Nov-20 24-Apr-20	Revised to include terms of up to 30 days (from 90 days) Revised to include terms of up to 90 days

CHAPTER 4

The monetary policy response in the euro area

Philip R. Lane

European Central Bank and CEPR

Drawing on Lane (2020a, 2020b, 2020c, 2021a, 2021b), the goal of this chapter is to explain the ECB's monetary policy response to the pandemic shock. From the outset, there were three challenges for the ECB: (1) to stabilise markets; (2) to protect credit supply; and (3) to counter the adverse impact of the pandemic on the projected inflation path. Tackling the first pair of challenges was necessary in order to achieve the inflation aim, since it is problematic to run an effective monetary policy under conditions of market instability or a credit crunch.

In view of the shortfall in projected inflation, the ECB's monetary policy was already accommodative before the pandemic: in September 2019, the main policy rate (the deposit facility rate) had been lowered to -0.5% and it was decided to resume net asset purchases at a rate of €20 billion per month under our baseline Asset Purchase Programme (APP), with these measures reinforced by forward guidance that tied future monetary policy decisions to the inflation outlook and developments in underlying inflation dynamics. In addition, credit supply was supported by the third series of targeted longer-term refinancing operations (the TLTRO III programme).

In the initial response to the pandemic crisis, the ECB adopted a comprehensive package of complementary measures, as illustrated in Figure 1. Central elements included the escalation of asset purchases through the 12 March decision to add an extra €120 billion to the running APP and the 18 March launch of the Pandemic Emergency Purchase Programme (PEPP); a revision in the structure and pricing of the TLTRO programme; an easing of the collateral framework; and a set of supervisory measures (taken by the supervisory wing of the ECB). In combination with the forceful fiscal responses at national and EU level, these measures have been successful in stabilising financial markets and protecting credit supply. In addition to its market stabilisation role, the additional quantitative easing provided by the PEPP and the extra injection of liquidity through the expansion of the TLTRO programme also eased the overall monetary stance, helping to counter the negative impact of the pandemic on the projected inflation path.

FIGURE 1 ECB MEASURES SINCE THE START OF THE PANDEMIC

	March 2020	April 2020	June 2020	July and August 2020	December 2020	March 2021
Asset purchases	<p>Asset purchase programme (APP) envelope extended by EUR 120 bn in 2020</p> <ul style="list-style-type: none"> in addition to ongoing APP purchases of EUR 20bn per month and investments NYC commercial paper made eligible <p>Pandemic emergency purchase programme (PEPP) launched</p> <ul style="list-style-type: none"> EUR 750 bn envelope until at least Dec. 2020 flexible allocation across time, assets, countries 	<p>PEPP expanded</p> <ul style="list-style-type: none"> envelope increase by EUR 600 bn to EUR 1,350 bn and extension by 6 months until at least Jun. 2021 reinvestments at least until end of 2022 	<p>PEPP expanded</p> <ul style="list-style-type: none"> envelope increase by EUR 500 to EUR 1,850 bn and extension by 9 months until at least Mar. 2022 reinvestments at least until end 2023 puruing flexibility to preserve favourable financing conditions consistent with countering the downward impact of the pandemic on the projected path of inflation 	<p>PEPP</p> <ul style="list-style-type: none"> purchases under the PEPP over the next quarter to be conducted at a significantly higher pace than during the first quarter of 2021 		
	<p>Conditions for targeted lending programme (TLTRO III) eased</p> <ul style="list-style-type: none"> borrowing rate -25 to -75 bps (Jun. 2020 to Jun. 2021), depending on lending performance borrowing allowances raised, etc. <p>Additional longer-term refinancing operations (TLTROs)</p> <ul style="list-style-type: none"> Facilitating switch into TLTRO-III 	<p>Further easing of TLTRO-III conditions</p> <ul style="list-style-type: none"> borrowing rate -50 to -100 bps (Jun. 2020 to Jun. 2021), depending on lending performance further easing of terms and conditions <p>Pandemic emergency longer-term operations (PELTROs) introduced</p> <ul style="list-style-type: none"> 7.0% from May 2020, maturing by Sep. 2021 interest rate of -25 bps <p>Temporary easing of collateral requirements</p> <ul style="list-style-type: none"> reduction of collateral valuation haircuts mitigation of impact of potential rating changes wider eligibility of credit claims eligibility of Greek sovereign debt instruments 	<p>Recalibration of TLTRO-III conditions</p> <ul style="list-style-type: none"> borrowing rate -100bps until Jun.2022 - 3 additional operations between Jun and Dec. 2021 borrowing entitlement from 50 to 55% of their stock of eligible loans recalibrated conditions available only to banks that achieve a new (higher) lending target <p>Four additional PELTROs in 2021, which will continue to provide an effective liquidity backstop</p> <p>Temporary easing of collateral</p> <ul style="list-style-type: none"> requirements on Apr. 2020 was extended until June 2022 Continuing lending operations as fixed rate tender procedures with full allotment for as long as necessary 	<p>EURREP and temporary swaps/ repo lines</p> <ul style="list-style-type: none"> with non-euro area central banks extended until Mar 2022 		
Lending programmes	<p>EUR swap lines reactivated</p> <ul style="list-style-type: none"> with the central bank of Denmark <p>US dollar swap lines reactivated</p> <ul style="list-style-type: none"> with Federal Reserve and other major central banks, USD provision through liquidity swap line daily 7-day and weekly 84-day operations 	<p>EUR swap lines set up</p> <ul style="list-style-type: none"> with central banks of Croatia and Bulgaria 	<p>EURREP repo facility and EUR repo line set up</p> <ul style="list-style-type: none"> new Eurosystem repo facility to provide euro liquidity to non-euro area central banks (EURREP) repo line with central bank of Romania set up <p>Frequency of 7-day USD operations reduced</p> <ul style="list-style-type: none"> to three per week 	<p>EUR repo lines set up</p> <ul style="list-style-type: none"> with central banks of Albania, Hungary, Serbia, Republic of North Macedonia and San Marino <p>Frequency of 7-day USD operations reduced</p> <ul style="list-style-type: none"> to one per week as of 1 September 	<p>EURREP and temporary swaps/ repo lines</p> <ul style="list-style-type: none"> with non-euro area central banks extended until Mar 2022 	
	<p>Temporary capital, liquidity and operational relief</p> <ul style="list-style-type: none"> facilitating use of capital and liquidity buffers flexible prudential treatment of loans backed by public support measures and mitigation of procyclicality in accounting recommendation against dividend payments 	<p>Temporary reduction in capital requirements for market risk</p>	<p>Further guidance</p> <ul style="list-style-type: none"> guidance against dividend payments and for moderation in remuneration clarification on restoration of capital/liquidity buffers and supervisory expectations on addressing debtor stress expiry of some operational relief measures 	<p>Distributions and credit risk</p> <ul style="list-style-type: none"> recommendation to exercise extreme prudence on dividends and share buy-backs until end 2021 expectation that banks exercise extreme moderation on variable remuneration reminder to banks about importance of adequacy assessing, classifying and measuring credit risk 		
Swap/ repo lines						
Supervisory measures						

Notes: *The interest rates on the lending programmes are linked to the key ECB interest rates. The lending performance for the temporary rate reduction of TLTROs is targeted towards the pandemic period. The ECB reconfirmed its forward guidance on the path of policy interest rates and the APP throughout this period.
Source: ECB staff.

These policy-easing measures should be viewed as complementary to the already-low levels of the key policy rates (with the deposit facility rate as the current primary margin). Moreover, the ECB's forward guidance about the future setting of its policy measures plays a central role in determining the overall monetary stance. In relation to the key policy rates, the forward guidance links future rate setting to the inflation outlook; in turn, net purchases and reinvestment under the APP are linked to the rate path.¹

In terms of interest rate policy, the forward guidance is that the Governing Council expects to keep policy rates at their current or lower levels until we have seen the inflation outlook robustly converge to its inflation aim within the projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics. The concept of robust convergence signals that a high degree of confidence that the inflation outlook has durably approached the inflation aim is required, while the condition that convergence should also be evident in realised underlying inflation means that future rate-tightening will not run ahead of the hard data in terms of the out-turns for underlying inflation. Given this 'double hurdle' set of conditions, the forward guidance represents a strong commitment to keep financial conditions at highly accommodative levels for as long as necessary to lift inflation towards the inflation aim in a sustainable fashion.

In line with the forward guidance, market-based expectations of future policy rates have adjusted in response to changes to the inflation outlook. Figure 2 shows the evolution of the expected timing of the first increase in our key policy rates since September 2019, when the current forward guidance on the path of interest rates was introduced. In the initial weeks of the pandemic, the lift-off date was pushed from 2022 to 2027; it then stabilised around 2025/2026 for most of 2020. More recently, the market view of the lift-off date has been pulled forward to 2024, in response to the improvement in the economic outlook associated with the positive news about vaccine developments. Consistent with the forward guidance, market surveys have shown similar dynamics for the expected end date of net purchases under the APP. Through these endogenous market responses, the forward guidance has acted as an automatic stabiliser through the adjustment of monetary policy expectations – and hence the entire spectrum of monetary conditions – to changes in the inflation outlook.

1 Net asset purchases under the APP have a time horizon linked to the future tightening of the key policy rates, being expected to run for as long as necessary to reinforce the accommodative impact of the policy rates, and to end shortly before the start of raising the key ECB interest rates. Furthermore, reinvestment, in full, of the principal payments from maturing securities purchased under the APP will be continued for an extended period of time past the date when the ECB starts to increase interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

FIGURE 2 EONIA FORWARD CURVE AND LIFT-OFF DATES

Percentages per annum



Notes: The chart is based on daily Eonia forward curves and shows, for each day, at what date the Eonia forward curve crosses a threshold equal to Eonia + 10 bps. Latest observation: 9 April 2021.

Sources: Refinitiv and ECB calculations.

The forward guidance for PEPP is connected to the pandemic. Net PEPP purchases will continue until at least the end of March 2022 and, in any case, until the Governing Council judges that the coronavirus crisis phase is over; moreover, reinvestment will be maintained until at least the end of 2022 and, in any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

The combination of the pre-pandemic and pandemic-specific monetary policy measures has successfully contributed to the stabilisation of markets and has thereby helped to ensure the smooth transmission of monetary policy. Figures 3 and 4 show the evolution of the risk-free yield curve – as captured by overnight index swap (OIS) rates – and the GDP-weighted ten-year sovereign yields. Sovereign yields are central to the transmission of euro area monetary policy, since sovereign bond yields in each member countries are the basis for funding costs for households, corporates and banks (in addition to governments).

In relation to the risk-free yield curve, Figure 3 shows a significant lowering of the curve over the course of 2020. By December 2020, the yield curve was relatively flat compared to the deposit facility rate level of minus 50 basis points, prompting a pivot in the conduct of the PEPP towards maintaining favourable financing conditions – in particular, preventing a tightening in financing conditions that is inconsistent with countering the downward impact of the pandemic on the projected path of inflation. In response to the steepening that occurred in the first months of 2021 (driven by increased optimism about the global recovery, especially in relation to the US), the ECB stepped up its expected purchase pace under the PEPP at the March monetary policy meeting.

While Figure 4 shows that sovereign yields have largely tracked the evolution of the risk-free rate, there was an initial decoupling in the first weeks of the pandemic. To counter the risk of fragmentation, the PEPP was designed to enable the flexibility of purchases over time, across asset classes, and among jurisdictions to support the smooth transmission of monetary policy. The significant drop in yields upon the announcement of the PEPP vividly illustrated the importance of central banks in underpinning market stability in the event of a large adverse shock.

In a monetary union that lacks an area-wide common safe asset, flight-to-safety episodes have a geographic dimension, in view of the high substitutability across national financial systems that is generated by the absence of currency risk. The nature of such episodes is that heightened risk aversion not only involves a reassessment of the pricing of fundamentals-based risks but also may induce a withdrawal to so-called safe haven jurisdictions in the belief that other investors may also opt to make the same geographic reallocation decision.

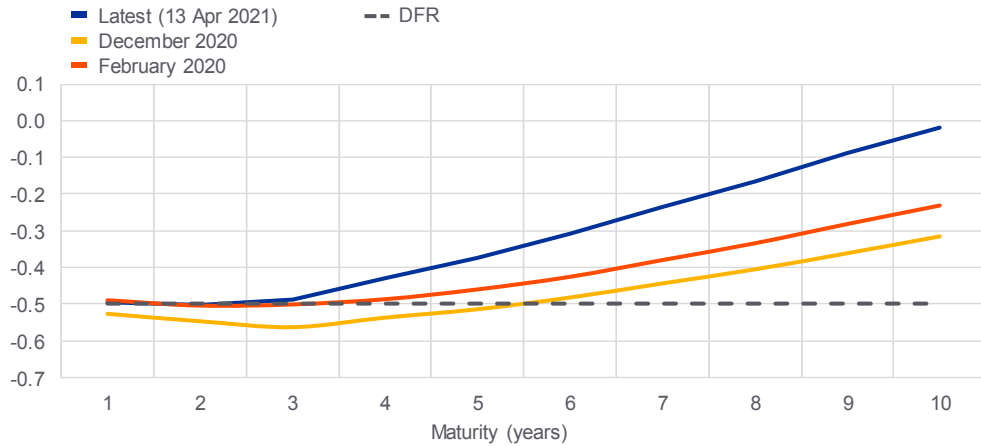
In the absence of active market stabilisation by the central bank, the intrinsic self-validating nature of flight-to-safety dynamics creates the risk of asset price movements and cross-border financial flows that, in terms of their magnitude, are unwarranted by fundamentals, but that also reflect a switch across multiple self-fulfilling beliefs-driven equilibria.

While it is always challenging to distinguish between fundamentals-driven and beliefs-driven repricing and reallocation dynamics (especially in real time), the specific circumstances of the pandemic crisis suggest that there was a compelling case for the central bank to act as a market stabiliser. First, as outlined above, it was clear that flight-to-safety pressures were operating at a global level, with the risk of a broad disconnect between asset prices and fundamentals across many markets. Second, the nature of the shock (a worldwide pandemic) meant that concerns about moral hazard were more attenuated than in some other scenarios.

The narrowing in sovereign spreads during 2020 was also supported by the development of the Next Generation EU programme. By demonstrating the joint commitment of the EU to support economic recovery across all member countries, global investors re-evaluated their beliefs about the resilience of the EU and the euro (Lane 2021c).

FIGURE 3 EURO AREA OIS YIELD CURVE

Percentages per annum



Note: DFR stands for deposit facility rate. The curves in February and December 2020 refer to 19 February and 8 December, respectively, Latest observation: 13 April 2021.

Sources: Refinitiv and ECB calculations.

FIGURE 4 EURO AREA TEN-YEAR GDP-WEIGHTED SOVEREIGN YIELD

Percentages per annum



Note: Latest observation: 9 April 2021.

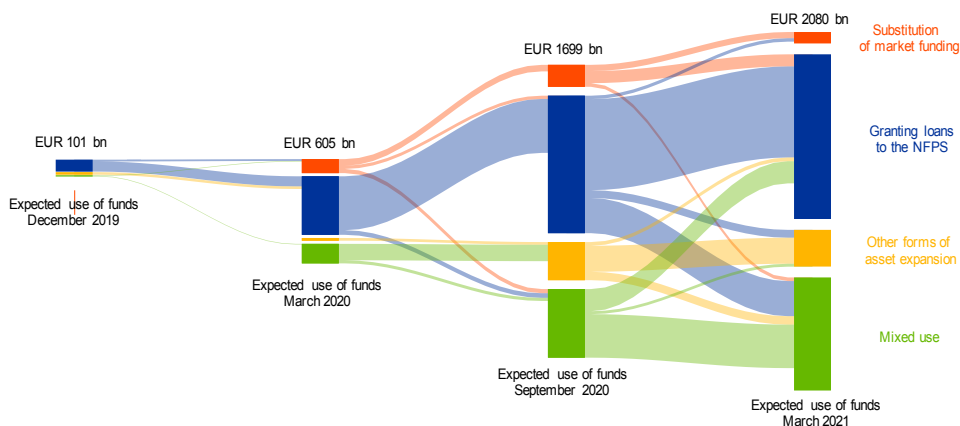
Sources: Refinitiv, Bloomberg and ECB calculations.

The re-calibration of the TLTRO III programme in response to the pandemic has provided significant monetary accommodation in a manner that is designed to protect credit supply. In particular, an important innovation was to set the minimum borrowing rate at 25 basis points below the average interest rate on the deposit facility. This lowered funding costs for bank-intermediated credit, even without a generalised reduction in the main traditional policy rates. Figure 5 shows the remarkable expansion in the scale of

TLTRO III operations, which have increased by about €2 trillion during the pandemic. ECB estimates indicate that TLTRO III liquidity can be expected to boost loan volumes considerably, to the tune of 3 percentage points cumulatively by 2022. In addition, the euro area bank lending survey indicates that TLTRO funding has been effective in easing the terms and conditions that banks apply in their lending.

FIGURE 5 EVOLUTION OF EXPECTED USE OF TLTRO III FUNDS

Share of respondents weighted by TLTRO III and bridge LTROs outstanding amounts



Notes: The four bars on the fourth column to the right measure the outstanding TLTRO III amounts in March 2021 distributed by the responses to the April 2021 BLS. The red bar measures the take-up of banks that reported that they will use TLTRO funds to substitute market funding sources. The blue bar measures the same take-up by banks that intend to use the funds for granting loans to the NFPS. The yellow bar collects take-up by banks that intend to use the funds to uses other than substituting market funding or granting loans (government securities, holding as cash, financing other financial entities, and others). The green bar reports the take-up by banks that do not plan to allocate the funds to a single category. The bars in the first column measure the outstanding TLTRO III amounts in December 2019 distributed by the responses to the January 2020 BLS. The bars in the second column measure the outstanding TLTRO III amounts in March 2020 and the amount of bridge LTROs distributed by the responses to the April 2020 BLS. The bars in the third column measure the outstanding TLTRO III amounts in September 2020 distributed by the responses to the October 2020 BLS. Shaded areas report take-up of banks that change their expected use of funds between survey waves.

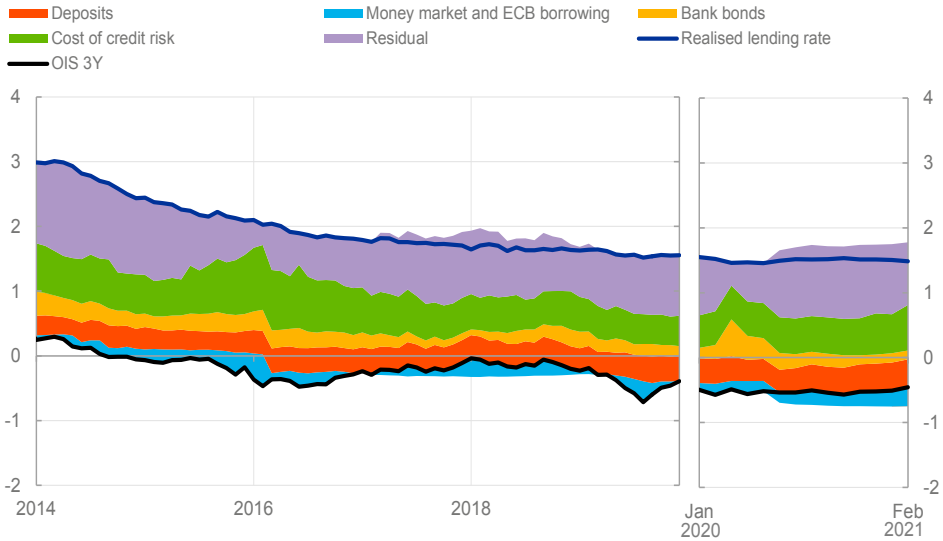
Sources: ECB, euro area bank lending survey and ECB calculations

Figure 6 shows the time series of the average euro area lending rate, broken down into the factors that banks consider when pricing a loan: the base rate (a term overnight interest swap rate); funding costs; credit risk; and the cost of capital. It is apparent that, despite an increase in credit risk, the supportive conditions of the ECB funding have contributed to keeping the lending rate around the historically low levels it had reached before the pandemic crisis.

In summary, Figure 7 sketches in a stylised form the implications of the pandemic shock for the ultimate responsibility of the ECB to deliver its inflation aim.

FIGURE 6 LENDING RATE TO NON-FINANCIAL CORPORATIONS AND ITS COMPONENTS

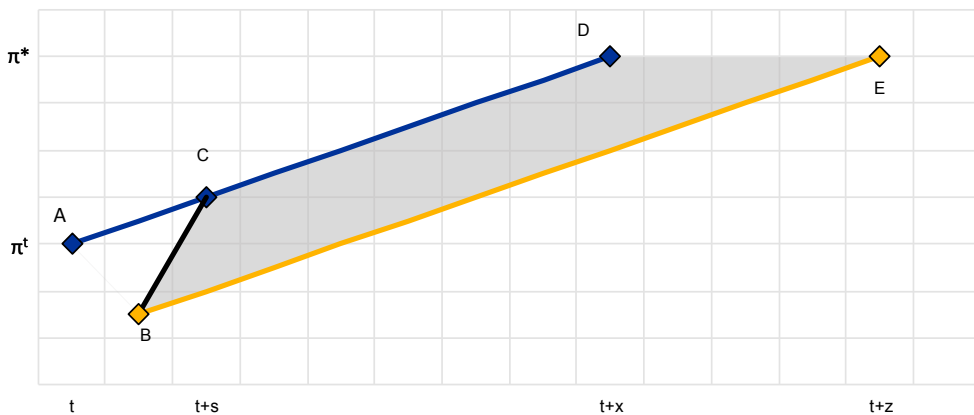
Percentages per annum



Notes: The intermediation wedge is the distance from the base rate (three-year overnight index swap (OIS), black solid line) to the realised lending rate, as measured by the observed lending rate for non-financial corporations. The margin is the residual between observed lending rates and all other components, including the floor given by the three-year OIS rate. The latest observations are for February 2021.

Sources: ECB (BSI, MIR), Bloomberg, Moody's and ECB calculations.

FIGURE 7 THE FUTURE INFLATION PATH



Notes: "AD" (the blue line) represents the expected inflation path before the pandemic shock. The initial negative impact of the pandemic shock - in the absence of additional monetary policy accommodation - is captured by the downward shift in the expected path from "A" to "B". The "BE" path (the yellow line) illustrates a transition path of inflation that is even lower than originally envisaged. By providing additional monetary policy accommodation, the central bank can aim towards the upper region of the "BCDE" zone, so that the adjustment is closer to the "BCD" path.

Source: ECB.

Before the onset of the pandemic (time t), inflation was expected to rise gradually towards the inflation aim (π^*) along the “AD” path (the bold blue line). The initial negative impact of the pandemic shock on inflation is illustrated by the shift from “A” to “B”.

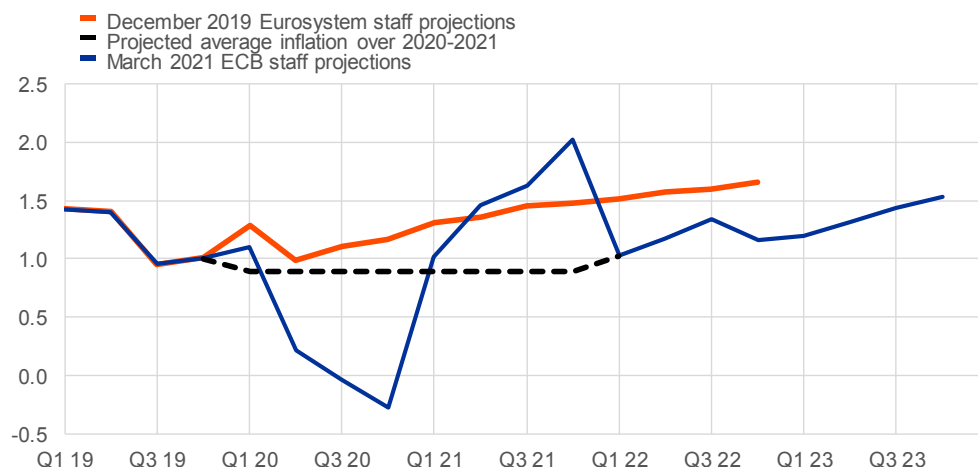
The monetary policy challenge can be divided into two stages. In the first stage, the challenge for the ECB has been to counter the negative inflation shock caused by the pandemic. One option would have been to simply accept a longer period of low inflation and an even more protracted path towards our inflation aim (as illustrated by the “BE” path in Figure 7). However, this option was not desirable for a number of reasons. First, it would have been very costly. It would have implied higher real interest rates, thereby weakening the recovery of investment and consumption. Second, it would also have been a high-risk option: by tolerating a protracted period of even lower inflation, it might have fostered a downward drift in inflation expectations that could ultimately become entrenched, making it even more difficult for us to deliver our inflation aim. This is particularly relevant in the euro area context, with an already long period of below-target inflation before the pandemic.

Instead, a less costly and more prudent approach has been to add sufficient extra monetary policy accommodation to boost inflation momentum towards the upper region of the “BCDE” zone in Figure 7, in order to reconnect to the pre-pandemic inflation path. The central element in this first stage has been the introduction of the PEPP and the subsequent recalibration of its size and duration, in order to provide an intense phase of extra net asset purchases.

Figure 8 compares the March 2021 inflation projections to the pre-pandemic (December 2019) projected inflation path. Looking through the considerable volatility, it is projected that inflation will average around 1% during 2020–2021 (similar to the 2019 value) but will climb towards 1.4% in 2023. While it is clear that the task of countering the negative pandemic shock to the projected inflation path is not yet complete, it is also certain that inflation dynamics (and the economic outlook more generally) would have been far more negative without extensive monetary accommodation. In particular, according to internal estimates, our pandemic measures are projected to increase output by around 1.3 percentage points and inflation by around 0.8 percentage points cumulatively between 2020 and 2022. These estimates are conservative, since they do not fully capture the benefits gained by avoiding the adverse feedback loops between the real economy and financial markets that would have emerged in the absence of a prompt and comprehensive policy response.

FIGURE 8 SELECTED (B)MPE PROJECTIONS FOR INFLATION

Annual percentage changes



Notes: The dotted line refers to the projected average of inflation during the two years 2020 and 2021.

Sources: ECB and Eurosystem broad macroeconomic projections exercise.

However, the challenge that already existed before the pandemic will also remain even after the negative pandemic shock to the inflation path is offset: the timely convergence of inflation to our aim. Accordingly, the second stage of the monetary policy challenge is to deliver this goal. After the euro area has returned towards the pre-pandemic inflation path, the ECB will have to ensure that its monetary policy stance is appropriately calibrated in order to ensure timely and robust convergence to the medium-term inflation aim.

In both the first and second stages of the monetary policy challenge, fiscal policy will play an important role in the transmission of monetary policy. All else being equal, fiscal multipliers are higher in the current environment in which the monetary policy measures and forward guidance are supporting a low level for the yield curve. In terms of the initial impact of the pandemic, its adverse impact on the economy would have been significantly worse in the absence of countercyclical fiscal policy measures. The innovative nature and scale of the Next Generation EU recovery fund has also clearly contributed to the significant reduction in average sovereign bond yields and enhanced the prospect of a sustained recovery across the euro area. Looking ahead, the area-wide fiscal policy stance (aggregating between national and EU-level measures) for 2021 and beyond will play a crucial macroeconomic role, subject to the quality of the design and implementation of fiscal programmes.

In terms of policymaking, the ECB Governing Council will carefully assess the incoming information with regard to its implications for the medium-term inflation outlook. The Governing Council continues to stand ready to adjust all of its instruments, as appropriate, to ensure that inflation moves towards its aim in a sustained manner, in line with its commitment to symmetry. Furthermore, the current monetary policy strategy

review exercise provides an excellent opportunity to revisit the strategic underpinnings of our monetary policy, in order to ensure we are maximising our effectiveness and efficiency in delivering our mandate.

REFERENCES

Lane, P R (2020a), “[The monetary policy package: an analytical framework](#)”, The ECB Blog, 13 March.

Lane, P R (2020b), “[Understanding the pandemic emergency purchase programme](#)”, The ECB Blog, 22 June.

Lane, P R (2020c), “[The pandemic emergency: the three challenges for the ECB](#)”, presentation at the Jackson Hole Economic Policy Symposium “Navigating the Decade Ahead: Implications for Monetary Policy”, Federal Reserve Bank of Kansas City, 27 August.

Lane, P R (2021a), “[The compass of monetary policy: favourable financing conditions](#)”, speech at Comissão do Mercado de Valores Mobiliários, 25 February.

Lane, P R (2021b), “[Inflation Dynamics During a Pandemic](#)”, The ECB Blog, 1 April.

Lane, P R (2021c), “The Resilience of the Euro”, *Journal of Economic Perspectives* 35(2): 3-22.

ABOUT THE AUTHOR

Philip R. Lane joined the European Central Bank as a Member of the Executive Board in 2019. He is responsible for the Directorate General Economics and the Directorate General Monetary Policy. He is also honorary professor of economics at Trinity College Dublin and a research fellow at the Centre for Economic Policy Research. Before joining the ECB, he was the Governor of the Central Bank of Ireland. He has also chaired the Advisory Scientific Committee and Advisory Technical Committee of the European Systemic Risk Board and was Whately Professor of Political Economy at Trinity College Dublin.

A graduate of Trinity College Dublin, he was awarded a PhD in Economics from Harvard University in 1995 and was Assistant Professor of Economics and International Affairs at Columbia University from 1995 to 1997, before returning to Dublin. In 2001 he was the inaugural recipient of the Bernácer Prize for outstanding contributions to European monetary economics.

CHAPTER 5

The Bank of Japan's monetary policy in the time of Covid-19

Masayoshi Amamiya

Bank of Japan

INTRODUCTION

As in other countries, the Covid-19 pandemic has caused tremendous human and economic hardship in Japan. Japan's economic activity contracted sharply in 2020, with real GDP declining by 4.7%. Since the outbreak of the pandemic, the Japanese government and the Bank of Japan (BoJ) have taken swift and forceful policy actions to support the economy. The first half of this section explains the BoJ's policy response to the pandemic. The second half explains the BoJ's policy assessment and actions for further effective and sustainable monetary easing announced in March 2021.

MONETARY POLICY RESPONSE TO THE COVID-19 PANDEMIC

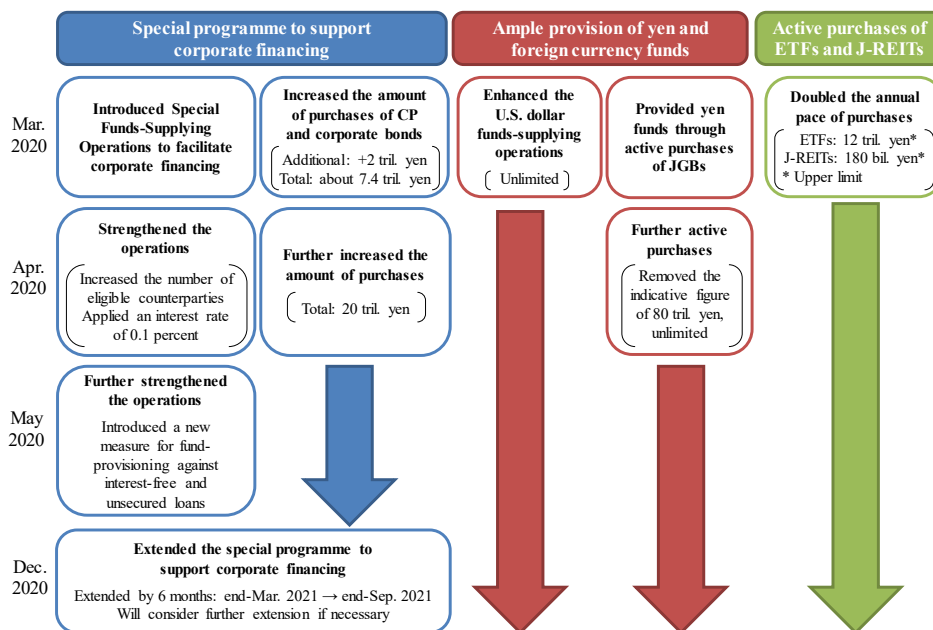
Monetary easing through three measures

In response to the Covid-19 pandemic, the BoJ has considered it important to ensure smooth corporate financing, such as through funds-supplying measures to support lending, and to maintain stability in financial markets through large-scale provision of liquidity. With this in mind, the BoJ has been enhancing monetary easing since March 2020, through the following three measures (Figure 1).

First, the BoJ launched a special programme to support corporate financing. The programme consists of (1) purchases of commercial paper (CP) and corporate bonds; and (2) the Special Funds-Supplying Operations, which is a fund-provisioning measure to encourage financial institutions' lending to firms. The Bank decided to increase by four times the maximum amount of CP and corporate bonds to be purchased, from about 5 trillion yen to about 20 trillion yen in total. For the Special Operations, the Bank decided to provide funds on favourable terms to financial institutions that make loans in response to the pandemic in order to encourage them to fulfil the functioning of financial intermediation. The Special Operations are also tied to the government's economic measures. When private financial institutions provide what are effectively interest-free and unsecured loans, mainly to small and medium-sized firms, based on

the government's measures, the BoJ provides funds to these institutions on favourable terms. The amount outstanding of the Special Operations has been increasing since its introduction in March 2020, reaching about 65 trillion yen as of the end of March 2021.

FIGURE 1 THE BANK OF JAPAN'S MONETARY POLICY RESPONSE TO THE PANDEMIC



Source: Bank of Japan.

Second, to maintain stability in the financial markets, the BoJ adopted a framework through which further ample yen and foreign currency funds can be provided in a flexible manner. For the yen funds, the Bank decided to conduct further active purchases of both Japanese government bonds (JGBs) and treasury bills, with a view to maintaining stability in the bond market and stabilising the entire yield curve at a low level. The Bank announced that it would purchase a necessary amount of JGBs without setting an upper limit, removing the indicative figure of an annual pace of increase in the amount outstanding, which was about 80 trillion yen. Regarding foreign currency funds, the BoJ has provided a large amount of US dollars in cooperation with five other major central banks, which exceeded \$200 billion at the peak in May 2020.

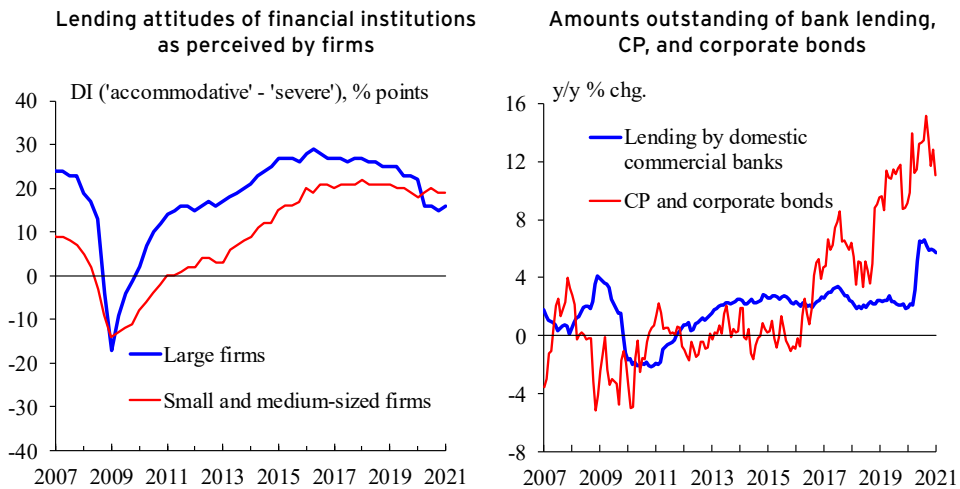
Third, to lower the risk premia in asset markets, the BoJ decided to actively purchase exchange-traded funds (ETFs) as well as Japan real estate investment trusts (J-REITs), and to double the annual pace of these purchases for the time being, with upper limits

of about 12 trillion yen and about 180 billion yen, respectively.¹ The aim of this measure is to prevent firms' and households' sentiment from deteriorating through heightened volatility in asset markets, thereby supporting economic activity.

The effects of policy measures

The BoJ's powerful monetary easing measures have had positive effects, together with the government's measures and financial institutions' efforts (Figure 2).

FIGURE 2 FINANCIAL CONDITIONS



Sources: Bank of Japan; Japan Securities Depository Center; Japan Securities Dealers Association; I-N Information Systems.

Although corporate financing has remained under stress, the environment for external funding, such as bank borrowing as well as the issuance of CP and corporate bonds, has remained accommodative. Firms' funding costs have been hovering at low levels. The annual increase in the amount of bank lending has been at around 6%, the highest in about 30 years, on the back of financial institutions' accommodative lending attitudes. The increase in the aggregate amount of CP and corporate bonds has been at a high level, exceeding 10%. In other words, the smooth functioning of financial intermediation has been maintained, and this is a significant difference from the time of the Global Financial Crisis (GFC), when downward pressure from the financial side on the real economy intensified (Amamiya 2020b). In addition, global financial markets, which had been

¹ To be more precise, at the Monetary Policy Meeting in March 2020, while expanding the maximum annual purchase amount of ETFs and J-REITs to about 12 trillion yen and about 180 billion yen, respectively, the BoJ maintained the principle guideline for purchases of these assets under which their amounts outstanding will increase at an annual pace of about 6 trillion yen and about 90 billion yen, respectively (Bank of Japan 2020).

highly volatile in the spring of 2020, have regained stability earlier this time than in the case of the GFC, mainly due to large-scale policy responses by governments and central banks around the world, including the BoJ.

However, with the economy improving at a moderate pace, corporate financing is likely to remain under stress. The BoJ therefore decided to extend the duration of the special programme by six months until the end of September 2021, to continue to support corporate financing. The Bank also made clear that it would consider a further extension of the programme if necessary, depending on the future impact of the pandemic.

Policy cooperation between the government and the central bank

Cooperation between governments and central banks is effective in responding to emergency situations such as the current pandemic. The Japanese government and the BoJ have taken actions in such a manner, and in May 2020, Deputy Prime Minister and Finance Minister Aso and Bank of Japan Governor Kuroda released a joint statement on countermeasures responding to the pandemic. The statement made clear that “the Government and the Bank are committed to making every effort to facilitate corporate financing and maintain stability in financial markets and doing whatever it takes to settle the situation, and will work together to bring the Japanese economy back again on the post-pandemic solid growth track” (Ministry of Finance and Bank of Japan 2020).

In the case of Japan, two features can be pointed out with respect to policy cooperation between the government and the central bank (Amamiya 2020a).

First, an effective policy mix of monetary and fiscal policies has been achieved under the framework of yield curve control. Under yield curve control, the BoJ sets the targets for short- and long-term interest rates that it judges the most appropriate to achieve the price stability target, and purchases a necessary amount of JGBs solely for the purpose of monetary policy. Therefore, the Bank’s purchase of JGBs does not represent monetary financing of government debt. The reason why the BoJ has conducted further active purchases of JGBs in response to the pandemic is that maintaining stability in the bond market and stabilising the entire yield curve at a low level have been required for the conduct of monetary policy. Meanwhile, the government has been able to make use of the accommodative financial conditions under yield curve control to implement aggressive fiscal measures in response to the pandemic. This is how monetary and fiscal policies have produced synergistic effects.

Second, in the area of corporate financing, the government and the BoJ have worked together effectively by clarifying their respective roles. As for measures addressing the solvency issue, the government has established programmes through which credit guaranteed loans as well as capital and quasi-capital funds can be provided. With respect to effectively interest-free and unsecured loans provided through private financial institutions, the government introduced a scheme under which the credit risk of these loans is covered by credit guarantees. On the other hand, the BoJ has strongly supported

corporate financing by providing liquidity, which is the fundamental role of the central bank. As part of its measures, the Bank has provided funds on favourable terms to financial institutions that conduct lending through the government's programmes to support financing in its economic package, thereby cooperating with the government's actions.

FURTHER EFFECTIVE AND SUSTAINABLE MONETARY EASING

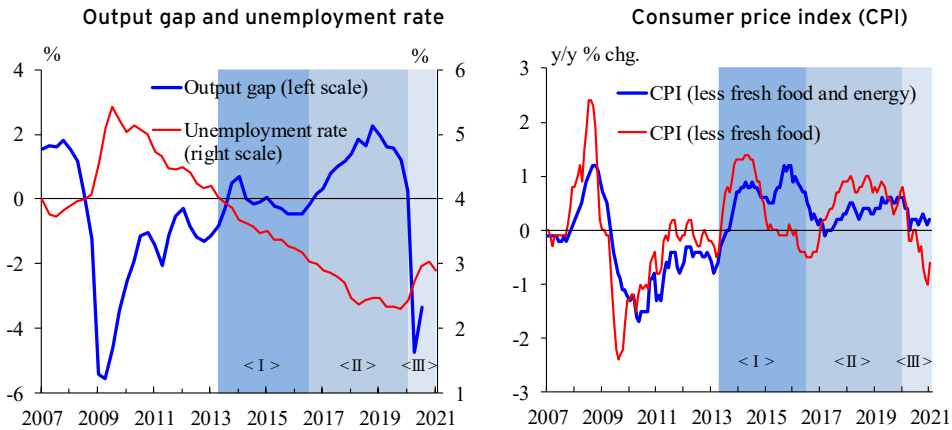
Motivation behind the assessment for further effective and sustainable monetary easing

The BoJ has been conducting large-scale monetary easing since the introduction of quantitative and qualitative monetary easing (QQE) in April 2013, with a view to achieving the price stability target of 2%. In September 2016, the Bank conducted a comprehensive assessment of its policy framework and introduced QQE with yield curve control. The current framework has been working well since its introduction, including the period of the Covid-19 pandemic. However, given that economic activity and prices are projected to remain under downward pressure for some time due to the impact of the pandemic, it will take time to achieve the 2% target. Under these circumstances, the BoJ decided in December 2020 to conduct a policy assessment for further effective and sustainable monetary easing and released the findings in March 2021.

Policy effects of QQE with yield curve control

Economic and price developments since the introduction of QQE with yield curve control indicate that it has been producing positive effects in line with the intended mechanism (Bank of Japan 2021). Nominal interest rates in Japan have been kept at extremely low levels through yield curve control. With inflation expectations being higher than those prior to the introduction of QQE, real interest rates have been clearly negative. The low real interest rates have improved financial conditions, mainly through a decline in funding costs as well as favourable conditions in financial markets. Bank lending and the aggregate amount of CP and corporate bonds have continued to increase. In financial markets, foreign exchange rates have been stable and stock prices have been on an uptrend. These developments have pushed up economic activity, and corporate profits and the employment situation have improved. The output gap turned positive in 2017, and then expanded within positive territory (Figure 3). Wages have increased moderately, as seen in the fact that base pay – which did not rise during the period of deflation – has increased for seven consecutive years, and underlying inflation has taken hold in positive territory.

FIGURE 3 ECONOMIC DEVELOPMENTS SINCE THE INTRODUCTION OF QQE WITH YIELD CURVE CONTROL



Note: Shaded area <I> denotes the period since the introduction of QQE, <II> denotes the period since the introduction of QQE with yield curve control, and <III> denotes the period since the outbreak of the Covid-19 pandemic.

Sources: Bank of Japan; Ministry of Internal Affairs and Communications.

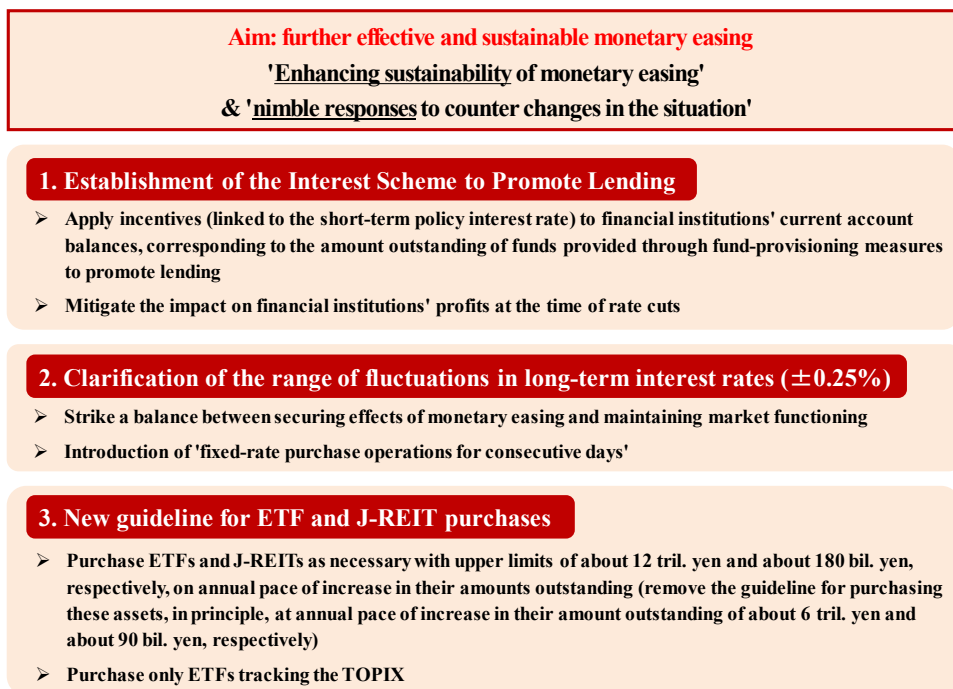
That said, the rise in the rate of inflation continues to be somewhat restrained. The main reason is that the adaptive formation mechanism of inflation expectations is deep rooted in Japan. The BoJ conducted several analyses in the policy assessment, and the results show that the formation of inflation expectations in Japan is strongly affected by not only the observed inflation rate but also by past experience and social norms. In other words, it will take time to change people’s mindset and behaviour based on the assumption that prices will not increase easily, which have become deeply entrenched due to the experience of prolonged deflation. At the same time, however, this implies that when people actually experience inflation for a long time, people’s mindset is likely to change gradually.

Based on the assessment described above, it is appropriate to continue with QQE with yield curve control in order to achieve the price stability target of 2%. At the same time, the BoJ judged that the following points are important in the conduct of monetary policy: (1) to continue with monetary easing in a sustainable manner, and (2) to make nimble and effective responses without hesitation to counter changes in economic and financial developments. The key words are “sustainable” and “nimble”, and taking these two words into account is critical to continuing with monetary easing for an extended period and to enhancing its effectiveness.

Policy actions to conduct further effective and sustainable monetary easing

With this in mind, in March 2021, the BoJ decided to take the following policy actions (Figure 4).

FIGURE 4 THE BANK OF JAPAN'S POLICY ACTIONS IN MARCH 2021



Source: Bank of Japan.

A. Establishment of the Interest Scheme to Promote Lending

First, with a view to enabling the BoJ to cut short- and long-term interest rates nimbly while considering the impact on the functioning of financial intermediation, the Bank established the Interest Scheme to Promote Lending. In this scheme, the BoJ applies certain interest rates as an incentive to financial institutions' current account balances, corresponding to the amount outstanding of funds that the Bank has been providing through its various fund-provisioning measures to promote lending. If the short-term policy interest rate is lowered as an additional easing measure – that is, if the rate is cut further into negative territory – the incentives are to be raised. As a result, this scheme is expected to promote financial institutions' lending and mitigate the impact on financial institutions' profits to some degree at the time of rate cuts. The establishment of this scheme is considered effective in changing the views of market participants who see the possibility of further rate cuts as limited because of the impact on the functioning of financial intermediation.

B. Clarification of the range of fluctuations in long-term interest rates

The second policy action concerns the conduct of yield curve control. The BoJ made clear that the range of fluctuations in long-term interest rates will be between around plus and minus 0.25% from the target level, which is set at “around 0%”. Maintaining interest rates stably at extremely low levels under yield curve control inevitably affects the functioning of the JGB market to some degree. With a view to conducting yield curve control sustainably, it is important to strike a balance between maintaining market functioning and appropriately controlling interest rates. In the policy assessment, the Bank reconfirmed that fluctuations within a certain range have positive effects on the functioning of the JGB market without impairing the effects of monetary easing.

With respect to the range of fluctuations, since July 2018, the BoJ had been allowing long-term interest rates to move upward and downward in about double the range, which was between around plus and minus 0.1% from the target level. However, there were times when the range of actual fluctuations became narrow. Based on recent developments in the JGB market and the findings of the policy assessment, the BoJ judged it appropriate to make clear its thinking on the range of long-term interest rate fluctuations.

At the same time, the BoJ decided to strengthen the existing operations and introduced “fixed-rate purchase operations for consecutive days” as a powerful tool to set an upper limit on interest when necessary. In order to secure the effects of monetary easing while conducting yield curve control flexibly during normal times, it is necessary to prevent a significant rise in interest rates. Through the “fixed-rate purchase operations for consecutive days”, the Bank is able to purchase an unlimited amount of JGBs with certain maturities at fixed rates consecutively for a certain period of time.

C. New guideline for ETF and J-REIT purchases

Third, the BoJ revised the guideline for ETF and J-REIT purchases, thereby conducting these purchases more flexibly in a prioritised manner. In the policy assessment, we confirmed that the large-scale purchase of ETFs during times of heightened market instability is effective in containing risk premia. Based on these findings, the Bank decided to maintain the upper limits on the annual pace of increase in the amounts outstanding of ETFs and J-REITs at about 12 trillion yen and about 180 billion yen, respectively, which were set in March 2020 as a temporary measure in response to the Covid-19 pandemic. On the other hand, the principle guideline – to purchase ETFs and J-REITs so that their amounts outstanding will increase at an annual pace of about 6 trillion yen and about 90 billion yen, respectively – was removed. Based on the new guideline, the BoJ conducts purchases of ETF and J-REITs as necessary, taking into account market conditions, thereby enhancing the sustainability and nimbleness of these purchases.

In addition, to avoid the uneven effects of the BoJ’s purchases on individual stocks, the Bank decided to purchase only ETFs tracking the Tokyo Stock Price Index (TOPIX), the index with the largest number of component stocks.

CONCLUSION

Eight years have passed since the introduction of QQE in 2013. Although it is taking much longer than originally anticipated to achieve the price stability target of 2%, it is clear that Japan's economy has improved significantly during this period and is no longer in deflation. While high uncertainty surrounds the economic outlook for now, primarily related to the path of the pandemic, the sustainability and nimbleness of QQE with yield curve control has been enhanced through the policy actions introduced in March 2021. Under the current framework, the BoJ will carry out its mandate of achieving the target of 2% by continuing to persistently conduct powerful monetary easing.

REFERENCES

Amamiya, M (2020a), "Japan's Economy and Monetary Policy", speech delivered at the Japan National Press Club, Tokyo, 29 July.

Amamiya, M (2020b), "Japan's Economy and Monetary Policy", speech delivered at a meeting with local leaders in Akita (via webcast), Tokyo, 2 December.

Bank of Japan (2020), "Enhancement of Monetary Easing in Light of the Impact of the Outbreak of the Novel Coronavirus (COVID-19)", press release, 16 March.

Bank of Japan (2021), "Assessment for Further Effective and Sustainable Monetary Easing", press release, 19 March.

Ministry of Finance and Bank of Japan (2020), "Statement by Minister Aso and Governor Kuroda on Countermeasures Responding to the Novel Coronavirus (Covid-19)", press release, 22 May.

ABOUT THE AUTHOR

Masayoshi Amamiya took office as deputy governor of the Bank of Japan in March 2018; his present term of office is until March 2023. Prior to this appointment, he served as executive director (2010–18) and as general manager of the Osaka branch (2012–13).

Mr. Amamiya served as director-general of the monetary affairs department (2006–10), as deputy director-general in the secretariat of the policy board (2004–06) and as associate director-general of the bank examination and surveillance department (2002–04).

Since joining the Bank of Japan in 1979, his career has encompassed fields including policy planning, market and economic research, bank surveillance, and internal management of the Bank. Mr. Amamiya holds a BA in economics from the University of Tokyo.

ANNEX: TIMELINE OF BOJ'S POLICY MEASURES IN THE TIME OF COVID-19

102

MONETARY POLICY AND CENTRAL BANKING IN THE COVID ERA

Policy response to the Covid-19 pandemic					
		Special programme to support corporate financing	Ample provision of yen and foreign currency funds	Active purchases of ETFs and J-REITs	
Mar. 2020	<p>Introduced Special Funds-Supplying Operations to facilitate corporate financing</p>	<p>Increased the amount of purchases of CP and corporate bonds - Additional: +2 tril. yen - Total: about 7.4 tril. yen</p>	<p>Enhanced the U.S. dollar funds-supplying operations - Unlimited</p>	<p>Provided yen funds through active purchases of JGBs</p>	<p>Doubled the annual pace of purchases - ETFs: 12 tril. yen* - J-REITs: 180 bil. yen* * Upper limit</p>
Apr. 2020	<p>Strengthened the operations - Increased the number of eligible counterparties - Applied an interest rate of 0.1 percent</p>	<p>Further increased the amount of purchases - Total: 20 tril. yen</p>	↓	<p>Further active purchases - Removed the indicative figure of 80 tril. yen, unlimited</p>	↓
May 2020	<p>Further strengthened the operations - Introduced a new measure for fund-provisioning against interest-free and unsecured loans</p>	↓	↓	↓	↓
Dec. 2020	<p>Extended the special programme to support corporate financing - Extended by 6 months: end-Mar. 2021 → end- Sep. 2021 - Will consider further extension if necessary</p>	↓	↓	↓	↓

Policy actions based on the assessment for further effective and sustainable monetary easing	
Mar. 2021	<p>Establishment of the Interest Scheme to Promote Lending - Apply incentives (linked to the short-term policy interest rate) to financial institutions' current account balances, corresponding to the amount outstanding of funds provided through fund-provisioning measures to promote lending - Mitigate the impact on financial institutions' profits at the time of rate cuts</p> <hr/> <p>Clarification of the range of fluctuations in long-term interest rates (±0.25%) - Strike a balance between securing effects of monetary easing and maintaining market functioning - Introduction of "fixed-rate purchase operations for consecutive days"</p> <hr/> <p>New guideline for ETF and J-REIT purchases - Purchase ETFs and J-REITs as necessary with upper limits of about 12 tril. yen and about 180 bil. yen, respectively, on annual paces of increase in their amounts outstanding (remove the guideline for purchasing these assets, in principle, at annual paces of increase in their amount outstanding of about 6 tril. yen and about 90 bil. yen, respectively) - Purchase only ETFs tracking the TOPIX</p>

Source: Bank of Japan.

CHAPTER 6

The response in Sweden

103

Per Jansson

Sveriges Riksbank

THE RESPONSE IN SWEDEN | JANSSON

INTRODUCTION

In this chapter, I will describe the Sveriges Riksbank's policy response to the Covid crisis. The content is based on the Account of Monetary Policy 2020 (Sveriges Riksbank 2021), the most recent of the yearly reports sent to the Swedish parliament (the Riksdag), and Monetary Policy Reports over the last year (Sveriges Riksbank 2020a).¹ Unless noted, the views expressed reflect the majority of the Executive Board. I will also add my own personal view in certain places, as expressed in the minutes from the monetary policy meetings (Sveriges Riksbank 2020b) and various speeches I have given since the outbreak of the pandemic.

The chapter is structured as follows. As a prequel, I briefly discuss the Swedish macroeconomy and monetary policy just before the crisis. I will then devote most of the chapter to the first phase of the pandemic. The second phase captures developments with less coronavirus spread and an improved economic outlook during the summer. The third and final phase captures the second wave of infections in the autumn and winter, with its implications for the macroeconomy and monetary policy. After that, I give a short account of the response in other policy areas, in particular how monetary and fiscal policy have complemented each other and the macroprudential policy measures taken by the Swedish Financial Supervisory Authority (*Finansinspektionen*, or FI). Finally, I offer some concluding remarks on the policy measures during the crisis.

PREQUEL: THE SWEDISH MACROECONOMY AND MONETARY POLICY BEFORE THE CRISIS

To understand fully the Riksbank's monetary policy during the Covid crisis, I would like to provide some background on where we came from in terms of the macroeconomy and monetary policy. During the period 2015–2019, the Riksbank implemented a negative policy rate (the repo rate) which, for most of that period, was at -0.5%. In addition, a quantitative easing (QE) programme was undertaken in the form of government bond

¹ The description and discussion here are thus confined to 2020. While the crisis is not over yet, the events of last year and the action taken during last year (hopefully) give a fairly comprehensive picture of the Riksbank's monetary policy during the pandemic.

purchases. This was done in order to safeguard the credibility of the inflation target, given that actual inflation had been well below the target of 2% since 2011. However, during 2017 and 2018, the economy had been growing quite fast and running at a clearly positive output gap, and inflation was on average around the target of 2%. Given that development, a majority of the Executive Board of the Riksbank voted to raise the policy rate in small steps of 0.25 percentage points in December 2018 and December 2019, to 0%.²

Ahead of the **monetary policy meeting on 11 February 2020**, the spread of the coronavirus was still limited and the Executive Board was able to note that the economic outlook and inflation prospects were approximately the same as in December of the year before. The Executive Board was unanimous in its decision to hold the repo rate unchanged at 0%, in line with the forecast from December.

FIRST PHASE: THE PANDEMIC HITS WITH FULL FORCE - TURBULENCE ON FINANCIAL MARKETS

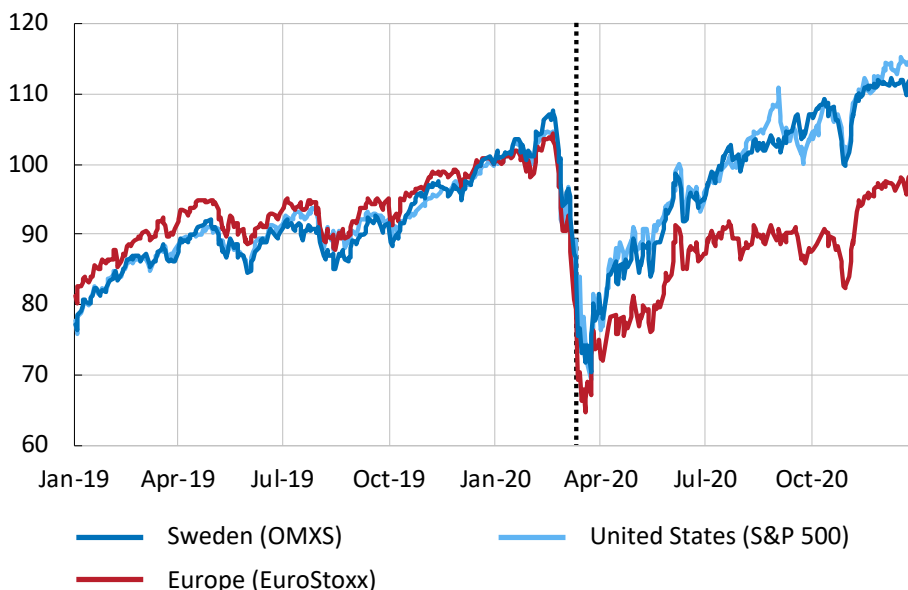
Not long after the February monetary policy meeting, reports began to appear that the coronavirus was spreading rapidly outside China. Furthermore, this did not only include countries in the proximity of China, such as South Korea. In northern Italy, several towns in the Lombardy region were put in lockdown on 21 February following outbreak clusters – the epidemic had taken off in Europe. Stock prices began to fall, out of uncertainty about the global spread of the virus. Thereafter, the turn of events was dramatic. At the start of March, the virus began to spread at an increasingly fast rate around the world and, on 11 March, WHO declared Covid-19 a pandemic. Strong turbulence arose on financial markets in the form of further stock market falls and very high volatility, and risk premiums of various interest-bearing assets shooting up. On 12 March, the Stockholm stock index fell by 11%, the largest fall ever recorded during a single day. This meant that in the period since 20 February, the index had fallen by 30% (see Figure 1).

To slow down the spread of infection and thereby give health and medical services a greater chance of coping with the increased burden, countries around the world introduced comprehensive mobility restrictions, which severely slowed down activity in the global economy. In addition, further measures in the form of self-imposed restrictions among households and companies overall led to a full-blown collapse in demand for activities involving human contact, such as travel, hotel and restaurant services, and cultural and sporting events. The household sector was also impacted by falling wealth values and increased unemployment.

² Personally, I entered reservations against both these hikes of the policy rate. But this is not the place to dwell on this particular issue.

FIGURE 1 STOCK MARKET MOVEMENTS IN UNITED STATES, EUROPE AND SWEDEN

Index, 31 December 2019 = 100



Note: The broken vertical line marks 11 March 2020, when the WHO declared COVID-19 a pandemic.

Source: Macrobond.

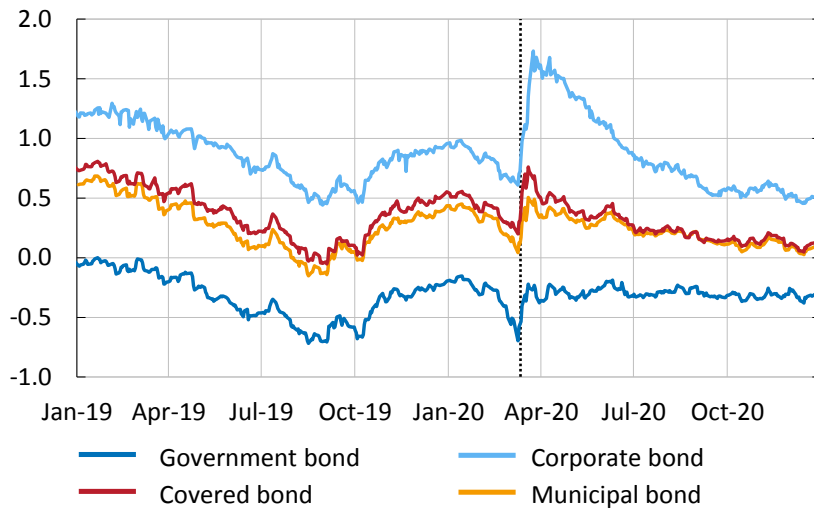
As the crisis hit corporate revenues directly, many companies rapidly found themselves facing severe liquidity problems. This also increased the risk for their financial backers. The subsequent financial turmoil affected both market rates and companies' access to credit. One effect was heightened demand for liquid assets, also known as a '*dash for cash*'. In particular, this concerned safe assets in US dollars with short maturities and central bank reserves. Interest in holding fixed-income instruments with long maturities decreased for many investors. As previously mentioned, yields for some of these securities rose quite dramatically (see Figure 2).

The higher the risk the instruments had, the more the yields rose. The markets for corporate bonds and covered bonds encountered particularly large problems. The yield for corporate bonds rose most of all. There were several reasons for this. As the Covid crisis had a negative effect on many companies' earnings, there was an increase in credit risk. This caused the credit-risk premium to rise. A further effect was that the market largely consisted only of sellers, which caused liquidity to deteriorate substantially. Those participants wishing, despite everything, to purchase corporate bonds therefore demanded a higher liquidity premium. One sign of this was that the bid-ask spread increased dramatically (see Figure 2).

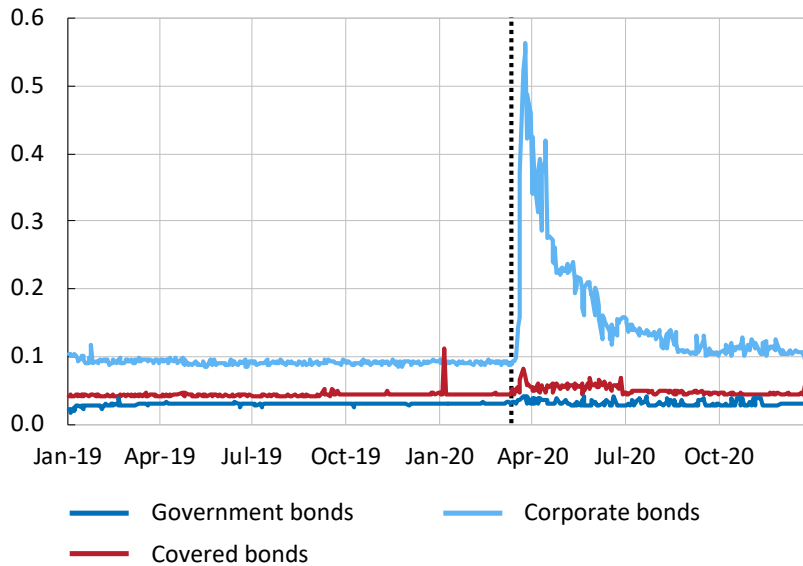
FIGURE 2 BOND MARKET DEVELOPMENTS IN SWEDEN

Per cent and percentage points

a) Bond yields, 5 year maturity



b) Bid-ask spread



Note: The broken vertical line marks 11 March 2020, when the WHO declared COVID-19 a pandemic. Bid-ask spread refers to listed rates, based on all available nominal government bonds, and just over 50 corporate bonds with varying maturities and with credit ratings equivalent to BBB or higher.

Source: Macrobond, Refinitiv, ASTRID (Reuters) and the Riksbank.

Many funds that owned corporate bonds and found themselves facing liquidity problems chose to sell covered bonds, which were easier to dispose of on the market. In this way, problems related to one asset spread to another. For a more detailed description of these mechanisms, see Sveriges Riksbank (2020c).

In summary, the initial phase of the Covid crisis meant that interest rates on long-term loans rose, as did the premiums for higher-risk fixed-income instruments. In a situation where many companies had already encountered acute liquidity problems, there was a risk of a severe credit tightening for both households and companies in the Swedish economy. The Riksbank therefore needed to adopt measures that could help keep down interest rates to Swedish companies and households, and that made it easier for banks to continue to provide them with credit.

THE RIKSBANK'S CRISIS RESPONSE

In mid-March, the Riksbank judged that there was an impending risk of a substantial credit crunch with negative effects for liquidity supply and the possibilities of attaining the inflation target. Between 12 March and 21 April, the Riksbank held five extraordinary monetary policy meetings.³ Decisions were taken on a number of measures to safeguard banks' continued funding capacity, secure lending to companies, maintain low interest rates for bank loans and securities borrowing, and support economic developments. Most of the policy measures used by the Riksbank during the Covid crisis were in fact decided upon between 12 and 19 March, that is, within about a week of WHO declaring Covid-19 a pandemic.⁴ Since then, variations and extensions have been added to the basic policies, but their backbone was in place very quickly. The measures are described in detail in Table 1.

April meeting

By the time of the next ordinary **monetary policy meeting on 27 April 2020**, it was clear that, despite the quick interventions of central banks around the world, the pandemic would have devastating effects on the global economy. The Executive Board of the Riksbank agreed that, for the time being, monetary policy needed to focus on measures to supply liquidity to the financial system and improve market functionality. This would create the conditions for a more rapid recovery once the economy could open up again, which in turn would improve the scope for attaining the inflation target. Several members of the Executive Board stressed the importance of measures taken within different policy areas complementing and reinforcing each other and, in particular, of fiscal policy.

³ In addition, six policy decisions by circulation were made during this period.

⁴ On 26 March, a temporary enlargement of the circle of counterparties was decided to allow institutions under the supervision of FI, other than monetary policy counterparties, to participate in the funding for lending programme.

TABLE 1 THE RIKSBANK'S POLICY MEASURES DURING 2020 IN RESPONSE TO THE COVID CRISIS

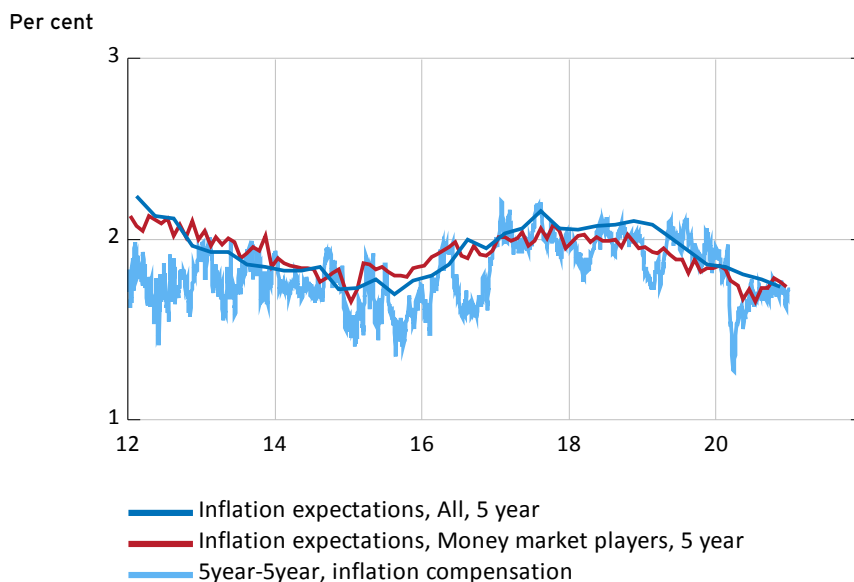
First date of decision	Measure	Scope (Purchased/utilised so far up to 5 February 2021)	Details
12 March	Funding for lending programme	Up to SEK 500 billion (SEK 164.5 billion)	Initiated 20 March 2020. On 30 June 2020, the maturity was extended to up to four years. Further, the interest supplement, if onward lending to corporations was not met, was cut from 0.20 percentage points to 0.10 percentage points above the repo rate.
16 March	Envelope for the Riksbank's asset purchases	Purchase programme lasts until 31 December 2021. Envelope amount up to SEK 700 billion. (SEK 346 billion)	On 30 June 2020, the programme was expanded from SEK 300 billion to SEK 500 billion and extended to 30 June 2021. On 26 November, the programme was further expanded and extended, to SEK 700 billion and 31 December 2021.
16 March	• Within the envelope: Purchases of government bonds	(SEK 50.7 billion)	Purchases initiated on 18 March 2020.
16 March	• Within the envelope: Purchases of covered bonds	(SEK 238 billion)	Purchases initiated on 25 March 2020.
16 March	• Within the envelope: Purchases of municipal bonds ⁵	(SEK 49.3 billion)	Purchases initiated on 28 April 2020.
19 March	• Within the envelope: Purchases of commercial paper	Purchases up to SEK 32 billion up to 30 June 2021 (Holdings: SEK 0.4 billion)	Purchases initiated on 2 April 2020.

5 Municipal bonds refer to bonds issued by Swedish municipalities, regions and Kommuninvest i Sverige AB.

First date of decision	Measure	Scope (Purchased/Utilised so far up to 5 February 2021)	Details
19 March	<ul style="list-style-type: none"> Within the envelope: Purchases of corporate bonds 	Purchases up to SEK 10 billion up to 30 June 2021 (SEK 4.4 billion)	Purchases initiated in the week beginning 14 September 2020.
26 November	<ul style="list-style-type: none"> Within the envelope: Purchases of treasury bills 	Purchases up to holdings of SEK 20 billion as of 30 June 2021 (Holdings: SEK 3 billion)	Purchases initiated on 8 January 2021.
16 March	Interest rate in standing loan facility cut	Cut from 0.75 to 0.10 percentage points above the repo rate.	Initially cut from 0.75 to 0.20 percentage points above the repo rate. On 30 June 2020, it was cut further to 0.10 percentage points.
16 March	Weekly market operations whereby banks are offered loans against collateral at three- and six-month maturities at the repo rate	Unlimited (SEK 28.7 billion)	On 30 June 2020, the initial supplement to the repo rate of 0.20 percentage points was removed. In addition, the Riksbank decided to also offer credits with a maturity of six months.
19 March	Eased collateral requirements when borrowing from the Riksbank	–	The Riksbank decided to relax the rule on special limits for covered bonds until 30 December 2024.
19 March	Loans in US dollars	Up to \$60 billion (\$2 billion)	On 15 September 2020, it was decided to continue offering loans in US dollars up to 30 March 2021.

It was regarded as reasonable to assume that long-term inflation expectations would not deviate too far from the inflation target, as the conditions for an economic recovery after the pandemic were good in Sweden, and much of the downturn in inflation was linked to temporarily lower energy prices (see Figure 3). Furthermore, as a matter of principle, an event such as a pandemic, while having major negative economic effects, should not of course be a game-changer when it comes to a central bank's more fundamental ability to attain its inflation target.

FIGURE 3 LONG-TERM INFLATION EXPECTATIONS IN SWEDEN

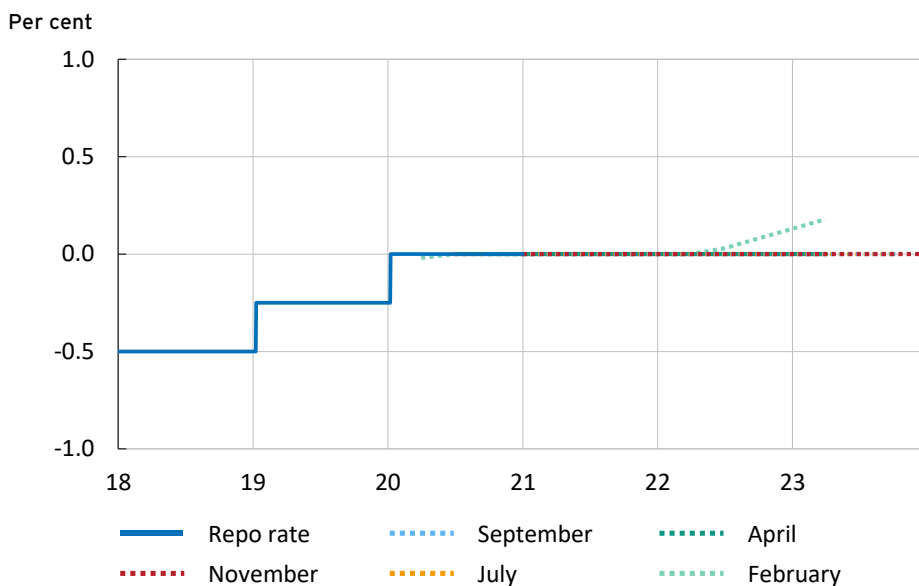


Note: Inflation compensation refers to a 5-year period starting in 5 years' time, calculated on the basis of bond yields.

Sources: Kantar Sifo Prospera and the Riksbank.

A good question to ask here is why the repo rate was not lowered. In the view of the Executive Board, rate cuts, which under normal circumstances would have stimulated the economy, would probably have been relatively ineffective when restrictions from authorities and other voluntary constraints were hampering normal consumption. There were also other arguments emphasised by the board against taking the repo rate back into negative territory. For example, if banks were to introduce negative deposit rates for households, there was a risk that households would react by making significant cash withdrawals, which, in turn, could lead to liquidity problems for banks. In addition to various forms of liquidity support to banks, the Riksbank therefore decided to purchase various financial assets to a greater extent than previously to meet the challenges of the crisis and keep interest rates to households and companies low. As seen in Figure 4, the forecast for the repo rate remained unchanged for every policy round since April.

FIGURE 4 THE RIKSBANK'S POLICY RATE AND FORECASTS OF THE POLICY RATE IN 2020



Note: Outcomes are daily rates and forecasts are quarterly averages. The forecasts, except the one in February, coincide with each other.

Sources: The Riksbank.

I would like to add here a few personal reflections. As market functionality was impaired and various risk premiums increased quite substantially, there was, in my view, a strong case for making direct interventions in the markets concerned, rather than trying to indirectly improve the situation in these markets by manipulating the (short) risk-free interest rate level. The way I see it, this was an argument that, under the prevailing circumstances, *directly* favoured the purchase of financial assets over the use of the policy rate as the preferred policy tool.

However, there were also arguments that *indirectly* supported the use of asset purchases (and other balance sheet-related tools) instead of using the repo rate. One such argument has already been mentioned, namely, that traditional monetary stimuli in the form of repo rate cuts are probably not very effective when people – voluntarily or involuntarily – are staying at home due to illness or concern over the spread of infection. As regards consumption, online shopping can to a certain extent be a substitute, but acquisitions that require mobility will be either postponed or cancelled altogether. Similar limitations very likely also apply to certain investment activities. In addition, the repo rate was already at a very low level and the scope for further cuts was therefore limited. This meant that each adjustment to the repo rate had to be considered very carefully so as not to unnecessarily waste the ammunition we had left. My view was that the conditions for repo rate cuts would improve when the virus infection rate started to decline and society gradually began to open up. A significant factor in my thoughts on the need to cut the repo rate in

the future was how inflation and, in particular, inflation expectations were developing. And in this context, of course, as long as longer-term inflation expectations stayed close to the target and the conditions for only a temporary drop in inflation were in place, it seemed wise to save the scarce repo-rate ammunition we still had.

The two pillars of the monetary policy response: Liquidity support and asset purchases

The monetary policy crisis response from the Riksbank can be said to comprise two pillars: liquidity support, to facilitate credit supply; and asset purchases, to keep interest rates low.⁶ In the following, I will describe the motivation behind these pillars.

The role of banks as lenders is important for favourable economic developments and for monetary policy. If lending deteriorates, the impact of the repo rate on other interest rates in the economy may also be affected. The Riksbank therefore launched a funding for lending programme in which it lent **money to the banks for onward lending to companies**. The terms were generous, with, for instance, a variable interest rate corresponding to the Riksbank's repo rate. The banks could in turn use this very stable and favourable funding source to increase their lending to Swedish non-financial corporations. Lending to sole proprietors (unincorporated businesses) was also included in the programme. These loans were aimed at securing lending to companies, particularly to small and medium-sized enterprises. The loans thus supported lending by banks, although it was still up to the banks themselves to conduct credit assessments.

Banks obtain some of their short-term funding in US dollars. In the initial phase of the pandemic, global demand for US dollars increased rapidly, making it difficult to arrange this funding. To increase access to US dollars in the financial system, the Riksbank started offering **loans in dollars against collateral**. This was made substantially easier by the Federal Reserve setting up so-called swap agreements with several central banks, including the Riksbank.

In addition, the Riksbank launched a number of other measures to facilitate banks' funding. These included:

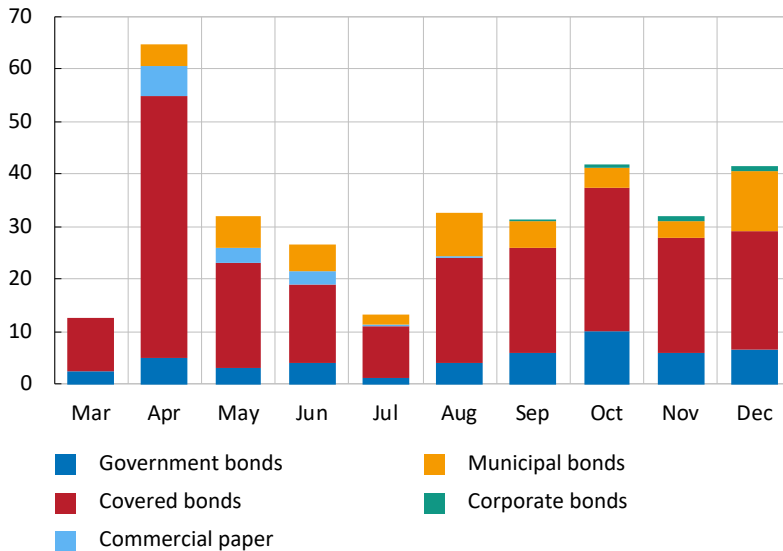
- weekly **extraordinary market operations**;
- amendments to the interest terms in the **standing loan facility**;
- amended regulations to increase flexibility regarding the **collateral** banks could use when borrowing from the Riksbank; and
- expansion of the **group of counterparties** for the Riksbank's transactions in order to broaden the impact of the funding for lending programme.

⁶ This refers to the direct purpose of the measures. Of course, a perfect separation is not possible since asset purchases indirectly also affect credit supply and liquidity support matters for interest rates.

The Riksbank also decided on extensive asset purchases, which included government bonds, covered bonds, municipal bonds and corporate debt securities in the form of commercial paper and corporate bonds. Figure 5 illustrates the development of the Riksbank's asset purchases during 2020.

FIGURE 5 THE RIKSBANK'S PURCHASES OF SECURITIES IN 2020

SEK billion, nominal amount



Note: The bars show the total purchases made within the scope of the asset purchase programme initiated in March 2020.

Sources: The Riksbank.

Purchases of **government bonds** dampen the general level of interest rates and long-term interest rates in the economy. When the Riksbank makes extensive purchases of government bonds, the term premium decreases and the general level of interest rates falls. The purchases also send a signal to the market that the Riksbank expects the repo rate to be low in the period ahead, which means that expectations of market participants regarding future short-term interest rates may also fall.

Purchases of **municipal bonds** can be seen as a complement to purchases of government bonds to affect longer market rates. But municipal bonds have a different status to government bonds among investors with regard to risk and liquidity, which makes their level of interest rates slightly higher (see Figure 2).

At the start of the pandemic, risk premiums for **covered bonds** increased. This market is key to banks' lending, as most lending for housing purposes in Sweden is funded via covered bonds. When risk premiums increased, there was therefore a risk that this important category of lending would decrease, resulting in higher interest rates for

households and making it impossible for some weaker households to get any loans at all. Purchases of covered bonds can reduce the risk premiums and support lending in the economy.

Historically, Swedish companies have primarily obtained funding via bank loans, but recently the issuance of **commercial paper** and **corporate bonds** has become more common. At present, issued securities' share of total borrowing among Swedish non-financial companies is around 35%, having increased considerably from less than 25% a decade ago. The increased economic importance of these financial assets, in combination with the fact that risk premiums on corporate bonds had continued to rise even after premiums on other bond markets had started to stabilise, led the Riksbank to take the decision to purchase these asset types too.

SECOND PHASE: REDUCED SPREAD OF INFECTION AND SIGNS OF ECONOMIC RECOVERY

At the start of the summer, the spread of infection decreased and restrictions started gradually to be lifted. Borders were opened, people started to move more freely, and shops could resume their business. Signs of an economic recovery were visible. Following the collapse in February and March, stock markets had since shown a marked recovery (see Figure 1). This was not least because of the massive monetary and fiscal support introduced around the world. Indicators of activity in the Swedish economy suggested that output and demand had also stabilised. The measures to facilitate lending and ensure that interest rates would remain low turned out to have had the desired effect. Rates on the Swedish fixed-income markets had returned relatively rapidly to earlier levels (see Figure 2).

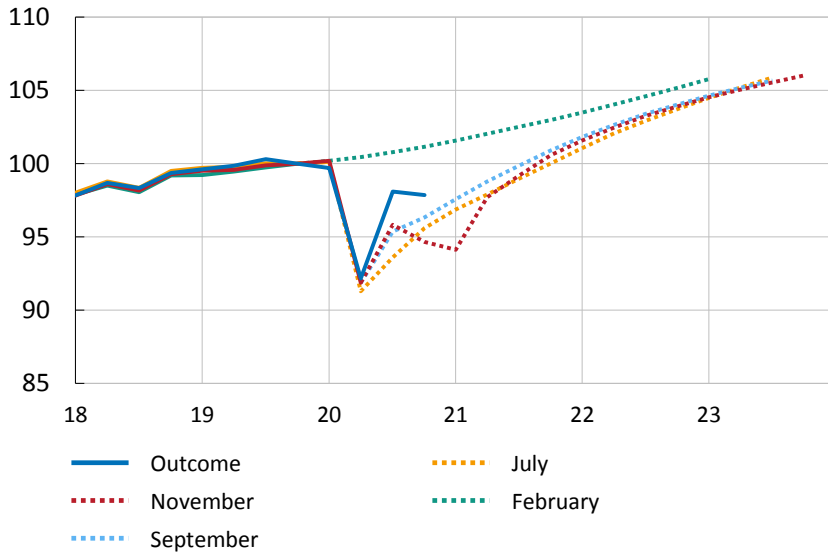
June meeting

At the **monetary policy meeting on 30 June 2020**, the Executive Board observed that the pandemic had had severely negative consequences for the global economy. Swedish GDP was expected to fall as much as during the global financial crisis and inflation was expected to be below target (see Figures 6 and 7). Unemployment was also expected to rise. The board emphasised that uncertainty over future developments remained very high, even if there were signs of a recovery underway in several areas. The envelope for asset purchases was extended from SEK 300 billion to SEK 500 billion up to the end of June 2021. The board further decided to extend maturities and cut interest rates on lending to banks. At the same time, the repo rate was held unchanged at 0%.

Let me here again add a few personal remarks. Although incoming inflation numbers were low, I thought that, given the circumstances, they were decent. Regarding inflation expectations, I perceived the development of longer-term expectations leading up to the monetary policy meeting to be acceptable. At that point, five-year ahead expectations were typically running around 1.7% .

FIGURE 6 SWEDISH GDP AND FORECASTS OF GDP IN 2020

Index 2019Q4 = 100

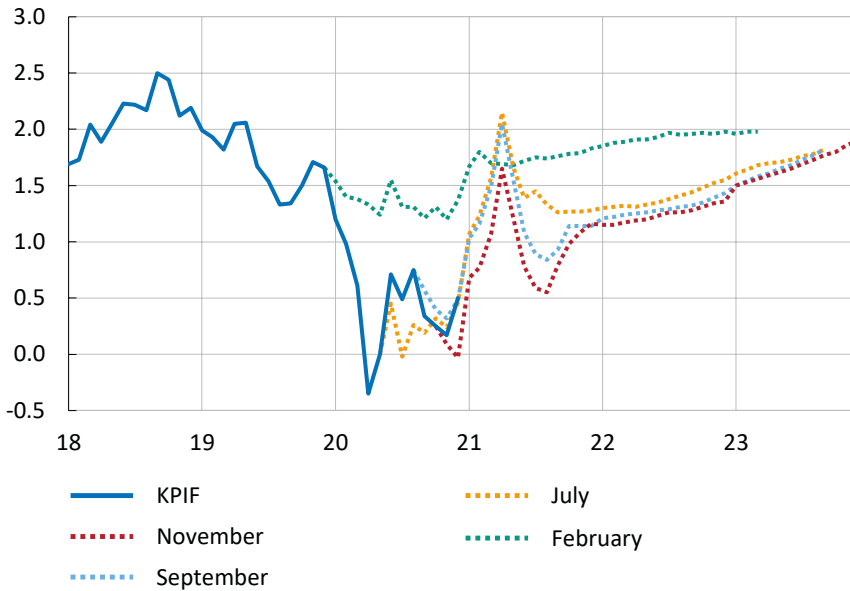


Note: The Riksbank published no forecasts in the Monetary Policy Report in April but instead only published two possible scenarios for future developments. Several outcome lines are shown in the figure. This is because the outcomes have been revised by Statistics Sweden.

Sources: Statistics Sweden and the Riksbank.

FIGURE 7 SWEDISH INFLATION AND FORECASTS OF INFLATION IN 2020

Annual percentage change



Note: Inflation according to the CPIF. The Riksbank published no forecasts in the Monetary Policy Report in April but instead only published two possible scenarios for future developments.

Sources: Statistics Sweden and the Riksbank.

In the Monetary Policy Report, we had clarified that we did not rule out using our traditional tool for providing economic stimulus – a reduced repo rate. I thought that this was an important clarification since it meant to me that the Executive Board was signalling that it was ready to act should a situation occur where the fundamental confidence in the inflation target was at stake. Indeed, I perceived preservation of the confidence in the inflation target to be what our job ‘is all about’ and wanted to make absolutely clear that if it was in the process of being undermined, then it would be “a question of doing what is required to avoid ending up in such a situation” (page 10 of the minutes from the monetary policy meeting in June). To underscore this point, I communicated that I had reassessed my previous view on the repo rate’s effective lower bound. In a speech in 2018, I argued that the repo rate’s lower bound, put simply, occurs when private individuals start to encounter negative rates on their deposit accounts (Jansson 2018). My revised point of view was now that if the fundamental confidence in the inflation target was at stake, then it would probably be sensible, if necessary, to accept negative rates on normal deposit accounts, if this was what was required to prevent the nominal anchor for price-setting and wage formation from coming loose.

September meeting

The pandemic continued to dominate developments in the global economy over the summer months, even though the spread of infection in Sweden and large parts of Europe had slowed down. At the **monetary policy meeting on 21 September 2020**, the Executive Board emphasised that the measures by governments and central banks around the world had helped calm the markets, mitigate the economic downturn and kick-start the recovery. The Riksbank’s measures had had the intended effects. Credit granting continued to function and interest rates for households and companies were low. It was also noted, however, that the pandemic was not yet over. The way back would be long and fraught with uncertainty, not least concerning the long-term effects of the pandemic. The economic recovery would be dependent on strong economic policy support. The Riksbank continued its asset purchases and offered liquidity in all the programmes launched previously. The repo rate was held unchanged at 0% and was expected to remain at this level in the coming years.

At this particular meeting, from my point of view, the developments in the more long-term inflation expectations continued to be relatively stable, with outcomes not too far from the target. Gradually over the year, the discussion of the risk picture for inflation had shifted. While downside risks were still monitored very carefully, over time, more emphasis was put on the upside risks for future inflation. For me to think that monetary policy needed to be made less expansionary in the event of unexpectedly high inflation, inflation would probably need to overshoot the target both substantially and for quite some time. I thought that it was important to communicate as clearly as possible around how different alternative developments of inflation would impact on my policy preferences and therefore, at this meeting, I chose to specify quite concretely what kind of inflation

overshoot I would find acceptable – close to 3% for at least a year. I also made it clear that the same tolerance would not exist in the case of inflation undershooting the target. In that case, a policy response would be much more likely, but now of course by making it more expansionary. I again pointed out that the situation would become particularly serious if it were to result in fundamental confidence problems for the inflation target. If that were to happen, as I saw it, it would hardly be possible to avoid once again implementing a negative repo rate.

THIRD PHASE: A SECOND WAVE OF INCREASED INFECTION HITS EUROPE HARD

During the autumn, Sweden and many other countries in Europe were affected by a second wave of infections. Tighter restrictions started to be reintroduced in many areas and the economic recovery was dampened and became more uncertain.

November meeting

A second wave of infection and tighter restrictions had worsened the economic outlook and inflation prospects (see Figures 6 and 7). Inflation in Sweden was low and well below target, but several members of the Executive Board pointed out that the development of inflation was hard to interpret. They alluded to major measurement problems because household consumption had changed substantially during the crisis and because it was not possible to measure some prices. Nevertheless, the board noted that it was positive that long-term inflation expectations were close to 2% and emphasised the importance of households and companies continuing to have confidence that inflation would return to target. The nature of the crisis, which meant that some sectors were hit particularly badly, meant that fiscal policy had an important role to play in mitigating its effects.

At the **monetary policy meeting on 25 November 2020**, the Executive Board considered that monetary policy would need to continue to be expansionary for a long time to facilitate the economic recovery and enable inflation to rise towards the target. All Executive Board members wished to leave the repo rate unchanged at 0% and increase the pace of asset purchases in the near term. A majority considered it appropriate to expand the asset-buying envelope from SEK 500 billion to SEK 700 billion, extend the programme until the end of 2021 and include purchases of treasury bills in the programme.

As regards my own view, I fully backed the expansion and extension of our asset purchases at this meeting. I noted that while inflation was below target, it did not actually matter so much, as long as inflation would rise going forward and economic agents also expected it to do so. And that assumption seemed to continue to hold, as the longer-term inflation expectations were stable and, if anything, displayed a weak upward trend. Also, the pandemic had picked up pace again, casting doubt on whether repo rate cuts would be

very effective. Against this background, I stood by my previous view that the best course of action at that juncture was to leave the repo rate unchanged, so as not to unnecessarily waste the ammunition we had left.

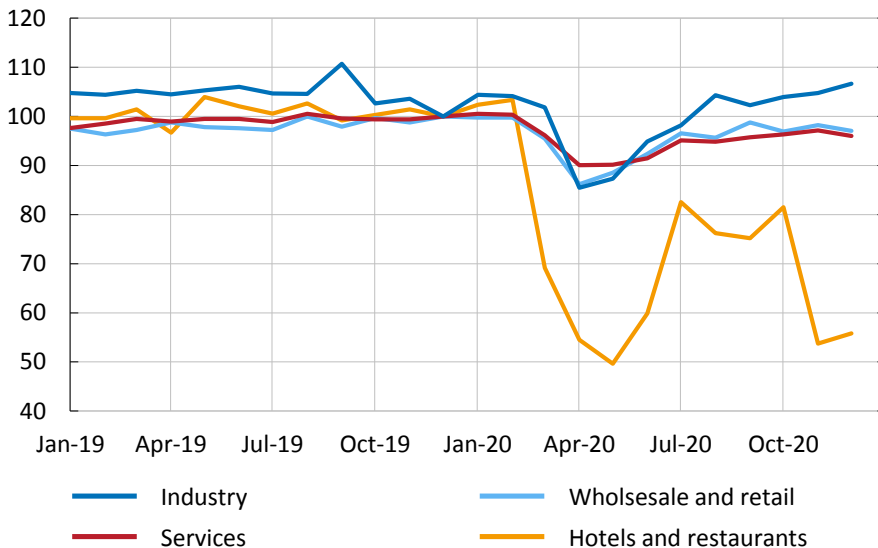
To make clear that this reasoning was contingent on the particular situation we were then facing, I emphasised that a repo rate cut could absolutely become relevant going forward. This would specifically be the case if we needed to make monetary policy significantly more expansionary, I noted. In the context, it was also important to point out that we were not talking here about a ‘deeply’ negative repo rate, that is, going down to a negative rate of several per cent, as described for example by Rogoff (2020). The latitude I envisaged we had was close to the -0.5% we had had before, possibly somewhat lower, perhaps -0.75% or -1%. For such negative rate levels, I thought that our previously conducted analyses, which basically said that the various negative side effects can be expected to be relatively minor, would still apply.

MONETARY AND FISCAL POLICY HAVE COMPLEMENTED EACH OTHER WELL, WITHOUT ANY KIND OF FORMAL COOPERATION

It is very clear that the Covid crisis is a highly asymmetric crisis. Industrial production and retail trade as a whole have stood up well. On the other hand, sales in sectors such as hotels and restaurants have declined substantially as harsh mobility restrictions were necessary for these businesses (see Figure 8).

FIGURE 8 PRODUCTION IN SELECTED INDUSTRIES

Index, December 2019 = 100



Note: Seasonally adjusted data.

Sources: Statistics Sweden.

Monetary policy has been concentrated on both maintaining credit supply and keeping interest rates low. The focus of fiscal policy has been on helping companies in crisis-ridden sectors so that they can survive and not have to lay off too many of their staff, and on providing support to households affected by the crisis. Access to credit for viable small and medium-sized enterprises has been facilitated by the state guaranteeing part of the banks' loans to these companies. Such programmes have been launched by the government and Swedish National Debt Office and have interacted well with the Riksbank's measures aimed at maintaining credit supply to Swedish companies. Among the other fiscal measures introduced are companies being able to request deferment of tax payments, reduced social security contributions, government support to short-time work schemes and reorientation support. All in all, the total fiscal envelope in Sweden so far has amounted to approximately SEK 1300 billion, or 26% of GDP. Of this, 6% were measures with a direct budgetary effect, while 20% were deferred taxes, guarantees, and so on.

RELAXED MACROPRUDENTIAL MEASURES BY FI HAVE FACILITATED CREDIT SUPPLY AND LOWERED MORTGAGE EXPENDITURE FOR HOUSEHOLDS

FI has had the responsibility for macroprudential policy in Sweden since 2014.

During the COVID crisis, the countercyclical capital buffer was lowered from 2.5% to 0%, which has freed up capital for Swedish banks. In addition, FI is allowing banks to fall temporarily below the liquidity coverage ratio (LCR) requirement, so that this requirement does not restrict their lending during the crisis.

FI has also allowed banks to make temporary exemptions from the amortisation requirements for all new and existing mortgagors. Even if amortisation in the longer run increases the resilience of households to shocks, the exemption is an important measure as it increases their room for manoeuvre during the crisis and gives them the opportunity to increase their economic buffers while simultaneously maintaining their consumption. For more in-depth comments on the macroprudential measures during the crisis, I refer to Sveriges Riksbank (2020c and 2020d).

CONCLUDING REMARKS

The two pillars of the Riksbank's crisis response have been liquidity support and asset purchases. The measures helped, in various ways, to avoid a credit crunch on the financial markets and maintain financial stability. In short, a financial crisis was avoided. The measures also meant that financial conditions were kept expansionary, providing support for the real economy and helping inflation to rise gradually towards the 2% target. In other words, there was no conflict of interest between maintaining financial stability, on

the one hand, and safeguarding price and macroeconomic stability on the other. On the contrary, all measures undertaken by the Riksbank have supported both these tasks at the same time, in a complicated interaction.

The repo rate has not been cut. The balance sheet-related measures actually used were judged more effective, given the particular characteristics of the Covid crisis. In addition, inflation problems have so far been temporary, not having had any effects on the more fundamental confidence in the inflation target. However, we have been very clear about the possibility to return to negative policy rates going forward, particularly if confidence in the inflation target were to come under threat.

A few years ago, I argued that fiscal policy would probably have to play a larger role in recessions than it did during the global financial crisis (Jansson 2018). The Covid crisis has proven to be a case in point. This is not least because of its highly asymmetric economic effects, where certain service industries have suffered from a more or less complete collapse in demand and have been in desperate need of economic support. Although no formal cooperation has been established, I think monetary and fiscal policy in Sweden have complemented each other quite well. Extensive measures in both policy areas have been introduced to manage the substantial economic shock caused by the pandemic. At the time of writing in March 2021, we are now seeing the outline of a recovery, but it will also be unevenly distributed over the different sectors of the economy. Since monetary policy easing has more of a broad impact, targeted measures within fiscal policy are essential, to support individual sectors or specific groups of unemployed persons.

REFERENCES

Sveriges Riksbank (2020a), *Monetary Policy Reports* of February, April, July, September and November (www.riksbank.se/en-gb/monetary-policy/monetary-policy-report/).

Sveriges Riksbank (2020b), Minutes from the Executive Board's monetary policy meetings on 27 April, 30 June, 21 September and 25 November (www.riksbank.se/en-gb/press-and-published/minutes-of-the-executive-boards-monetary-policy-meetings/).

Sveriges Riksbank (2020c), *Financial Stability Report 2020:1* (www.riksbank.se/en-gb/financial-stability/financial-stability-report/2020/financial-stability-report-20201/).

Sveriges Riksbank (2020d), *Financial Stability Report 2020:2* (www.riksbank.se/en-gb/financial-stability/financial-stability-report/2020/financial-stability-report-20202/).

Sveriges Riksbank (2021), *Account of Monetary Policy 2020* (www.riksbank.se/global/assets/media/rapporter/rpp/engelska/2021/account-of-monetary-policy-2020.pdf).

Jansson, P (2018), "Monetary policy in less favourable times – what are the options?", speech at Insurance Sweden, Stockholm, 4 December (www.riksbank.se/en-gb/press-and-published/speeches-and-presentations/2018/monetary-policy-in-less-favourable-times--what-are-the-options/).

Rogoff, K (2020), “The case for negative interest rates”, ING, 11 May (<https://think.ing.com/opinions/the-case-for-deeply-negative-interest-rates/>).

ABOUT THE AUTHOR

Per Jansson is Deputy Governor of the Riksbank. He took up the post on 1 January 2012 for a term of office of five years and, in 2016, received an extended term of office for another five years until 31 December 2021. He represents the Riksbank on the EU Economic and Financial Committee (EFC) and the Committee on the Global Financial System (CGFS) at the BIS. Furthermore, Per Jansson is the Governor of the Riksbank’s alternate on the Board of Directors of the BIS.

CHAPTER 7

The Swiss National Bank's monetary policy response to the Covid-19 pandemic

123

Thomas J. Jordan¹

Swiss National Bank

The Covid-19 pandemic and the associated containment measures led to a sharp economic downturn in Switzerland, as in many other countries. This situation presented a particular challenge to Swiss monetary policy in terms of ensuring appropriate monetary conditions, since interest rates were already very low before the onset of the pandemic. This chapter reviews the policy measures taken by the Swiss National Bank (SNB) in response to the pandemic.² It addresses the following questions: In what ways did the monetary policy responses in Switzerland differ from those in other countries, and why? Which policy measures worked well? And which design features were important for the effectiveness of these policies?

COVID-19 PANDEMIC LED TO SHARP RECESSION

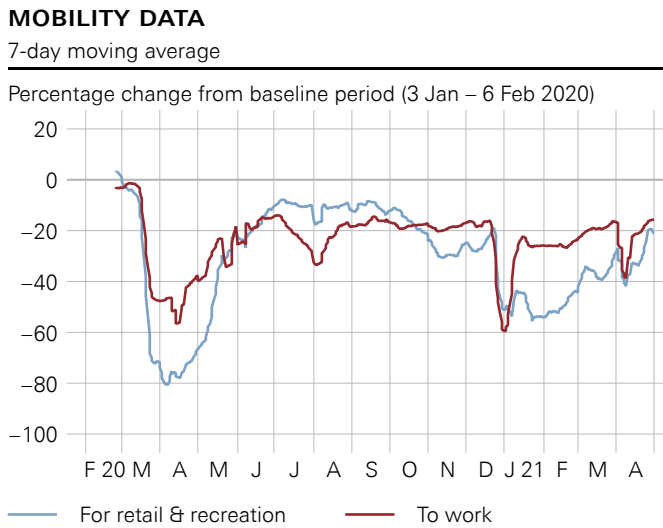
The Covid-19 pandemic pushed the Swiss economy into a sharp recession. The measures taken to contain the virus brought parts of the economy to a temporary standstill. Caution on the part of consumers, a decline in foreign demand due to the global economic slowdown, and disruptions to global supply chains all contributed to the downturn in economic activity. Figure 1 illustrates the downturn by showing the massive drop in mobility data.

The uncertainty caused by the global spread of Covid-19 also led to increased appreciation pressure on the Swiss franc. The Swiss franc often serves as a safe-haven currency, and as such tends to appreciate in times of financial stress and heightened economic uncertainty. Coming on top of the direct effects of the Covid-19 pandemic on the Swiss economy, the appreciation of the Swiss franc represented an additional drag on economic activity in Switzerland's export-oriented economy. It also put further downward pressure on inflation.

¹ The author would like to thank Christian Grisse for his support in preparing this essay. He also thanks Petra Gerlach, Carlos Lenz and the SNB Language Services for helpful comments.

² See also Jordan (2020a, b, c, d) and Swiss National Bank (2021).

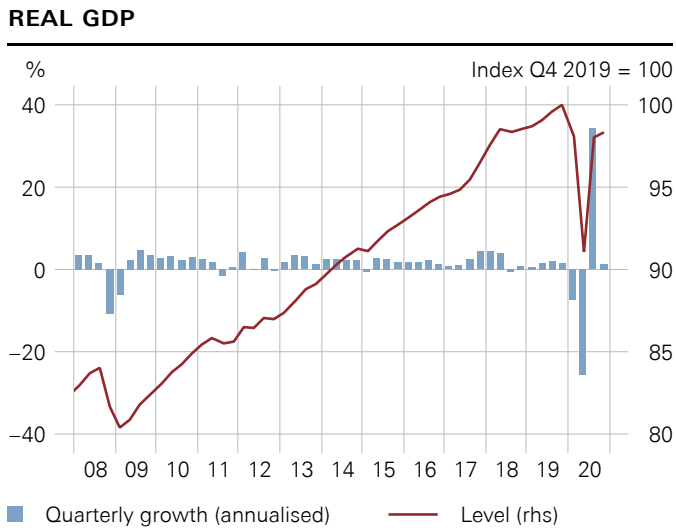
FIGURE 1 CAUTION AND CONTAINMENT MEASURES CAUSE MOBILITY TO DROP



Source: Google.

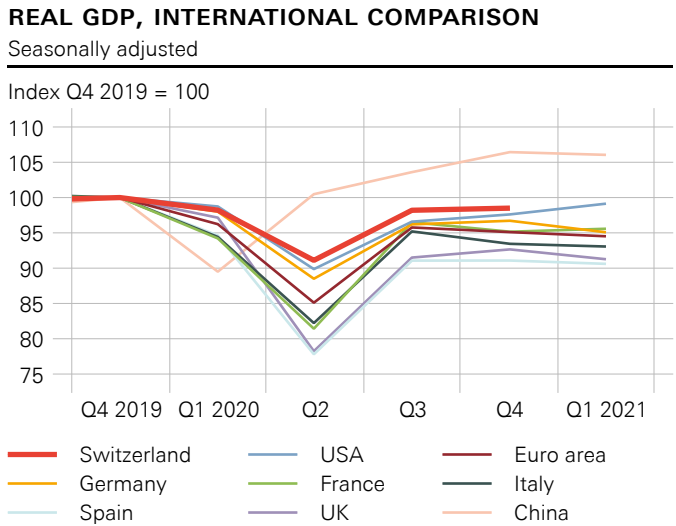
GDP fell by almost 9% in the first two quarters of 2020. Economic activity then picked up again in the third quarter as the containment measures were eased and fiscal and monetary policy supported the recovery. The recovery slowed down in the fourth quarter due to a second wave of infections. In 2020, GDP was about 3% lower than one year earlier (Figure 2) – a less pronounced downturn than in many other countries (Figure 3), but still the sharpest decline in Swiss GDP since 1975. Despite the severity of the economic downturn, unemployment rose only moderately as companies were able to make widespread use of short-time working in response to the drop in demand (Figure 4). Short-time working had already proved its worth as an effective automatic stabiliser in the financial crisis of 2007–2009. At the trough of the Covid-19 recession, around 28% of all economically active persons were in short-time work – 14 times more than during the financial crisis. Inflation had already been low before the pandemic, mostly towards the bottom of the range of 0% to 2% that the SNB equates with price stability. The slowdown in economic activity, the effect of an appreciating Swiss franc on the price of imported goods, and falling energy prices pushed inflation below zero (Figure 5).

FIGURE 2 COVID-19 LEADS TO SHARPEST DROP IN GDP SINCE 1975



Source: SECO, SNB.

FIGURE 3 RECESSION IN SWITZERLAND LESS PRONOUNCED THAN IN MANY OTHER COUNTRIES



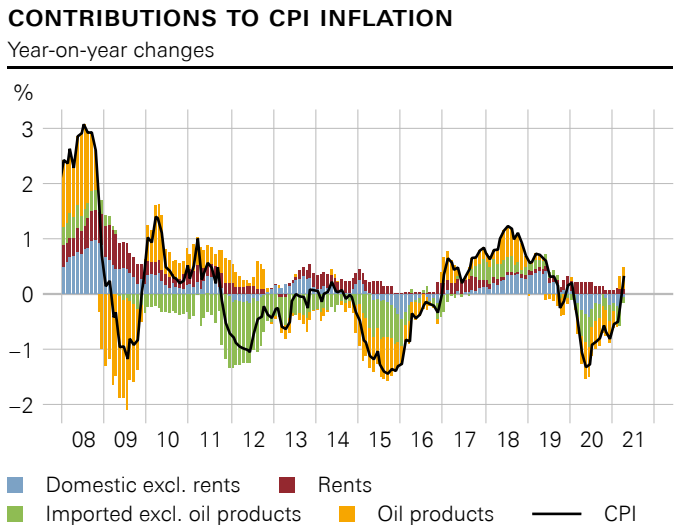
Source: SECO, Thomson Reuters.

FIGURE 4 UNEMPLOYMENT RISES ONLY MODERATELY THANKS TO THE USE OF SHORT-TIME WORKING



Source: SECO.

FIGURE 5 SWISS FRANC APPRECIATION EXERTS DOWNWARD PRESSURE ON INFLATION



Source: SFSO.

THE SNB'S CRISIS RESPONSE

The SNB's response to the crisis was aimed at ensuring appropriate monetary conditions and supporting credit supply. By maintaining its policy rate at -0.75% , the SNB ensured favourable financing conditions for firms and the public sector. This eased the burden in particular for those companies and institutions that faced increased funding needs. The negative policy rate and the interventions in the foreign exchange market, which the SNB stepped up in the crisis, reduced appreciation pressure on the Swiss franc. Moreover, in cooperation with the federal government, the Swiss Financial Market Supervisory Authority (FINMA) and the commercial banks, the SNB took measures to boost bank lending to companies experiencing liquidity shortfalls. Table 1 gives an overview of the policy decisions taken by the SNB in response to the Covid-19 pandemic.³

Countering the appreciation pressure

At the beginning of the Covid-19 pandemic, the SNB policy rate had already been at a historical low of -0.75% for five years (Figure 6). The SNB had also been intervening in the foreign exchange market, as necessary, for some time. This expansionary monetary policy was required because the strength of the Swiss franc had posed considerable challenges for Swiss firms in the preceding years, and inflation had repeatedly declined into negative territory.

Since the global financial crisis, the Swiss franc had appreciated sharply and was at times significantly overvalued. Safe-haven capital flows into Switzerland were one driver of the strength of the franc. In addition, the global decline in interest rates had also led to appreciation pressure on the Swiss currency. Historically, nominal interest rates have generally been substantially lower in Switzerland than in other countries, reflecting both lower inflation and the political stability and credibility of institutions in Switzerland. In response to the global financial crisis, the central banks in the major currency areas cut their policy rates. The SNB had to lower its policy rate into negative territory to at least partially restore the usual interest rate differential with other countries and thus reduce somewhat the attractiveness of the Swiss franc and alleviate the appreciation pressure.⁴

3 See also Swiss National Bank (2021). Furthermore, the Covid-19 pandemic led to increased pressure on global US dollar funding markets. To address this, the SNB, in cooperation with other central banks, used standing swap arrangements with the US Federal Reserve to enhance the provision of US dollar liquidity.

4 Negative interest rates make Swiss franc investments less attractive and thereby counter appreciation pressure (see Fink et al. 2020). Schelling and Towbin (2020) show moreover that the negative policy rate has had an expansionary effect on bank lending.

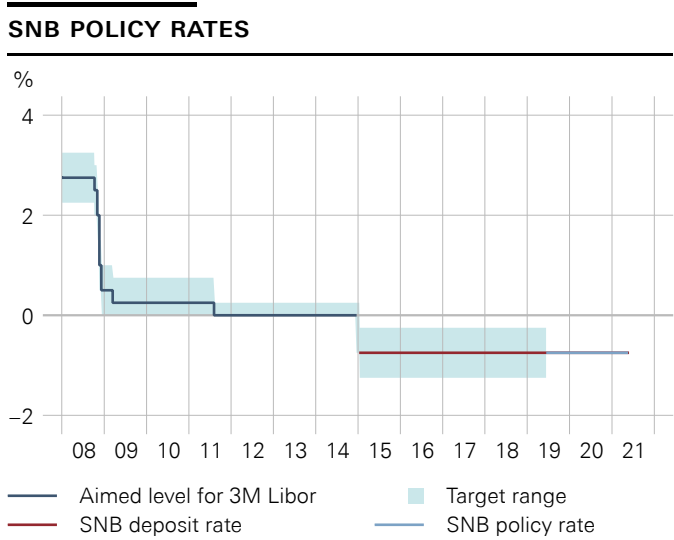
TABLE 1 CHRONOLOGY OF MAIN MONETARY POLICY DECISIONS

Date	Policy decision
15 March 2020	As a response to global US dollar funding pressures, the SNB, together with the Bank of Canada, the Bank of England, the Bank of Japan, the ECB and the US Federal Reserve, enhances the provision of US dollar liquidity via standing swap facilities.
19 March 2020	At its quarterly assessment, the SNB keeps its policy rate and interest on sight deposits at -0.75% . The SNB is intervening more strongly in the foreign exchange market. To strengthen the banks in their role as credit providers during these difficult times, the SNB raises the exemption threshold as of 1 April 2020, thus reducing the negative interest burden on the banking system. The threshold factor increases from 25 to 30. With a view to further increasing banks' room for manoeuvre, the SNB is examining whether a relaxation of the countercyclical capital buffer would be possible despite the vulnerabilities on the mortgage and real estate markets.
25 March 2020	The SNB announces that as part of a package of measures it is compiling with the Confederation and the Swiss Financial Market Supervisory Authority (FINMA), it is introducing the new SNB Covid-19 refinancing facility (CRF) as of 26 March. The aim of the CRF is to strengthen the supply of credit to the Swiss economy. The facility allows banks to obtain liquidity from the SNB, secured by federally guaranteed loans and at an interest rate of -0.75% . In order to ease the burden on the banking system, and after consulting with FINMA, the SNB also submits a proposal to the Federal Council requesting that the countercyclical capital buffer be reduced from 2% to 0% with immediate effect.
11 May 2020	The SNB announces that the CRF will be expanded. Effective immediately, banks can now also obtain liquidity by assigning claims secured by loan guarantees or credit default guarantees offered by cantons, provided these have been granted in order to cushion the economic impact of the coronavirus pandemic. Claims secured by joint and several guarantees provided for startups by the federal government in cooperation with the cantons are now likewise deemed to be eligible collateral.
18 June 2020; 24 September 2020; 17 December 2020	At its quarterly assessments, the SNB keeps its policy rate and interest on sight deposits at the SNB at -0.75% and remains willing to intervene more strongly in the foreign exchange market.

The Covid-19 pandemic exacerbated the long-standing problem of excessive upward pressure on the Swiss franc. Monetary policy easing by the major central banks through massive asset purchases and interest rate cuts pushed down foreign yields. As a result, the interest rate differential with Switzerland narrowed once again. Moreover, the high level of uncertainty about the economic outlook led to a flight to safe-haven currencies such as the Swiss franc. With the Covid-19 pandemic causing a severe downturn in economic activity, the task of monetary policy was to limit the appreciation of the Swiss franc and to prevent it from becoming an additional major drag on the economy and inflation. At

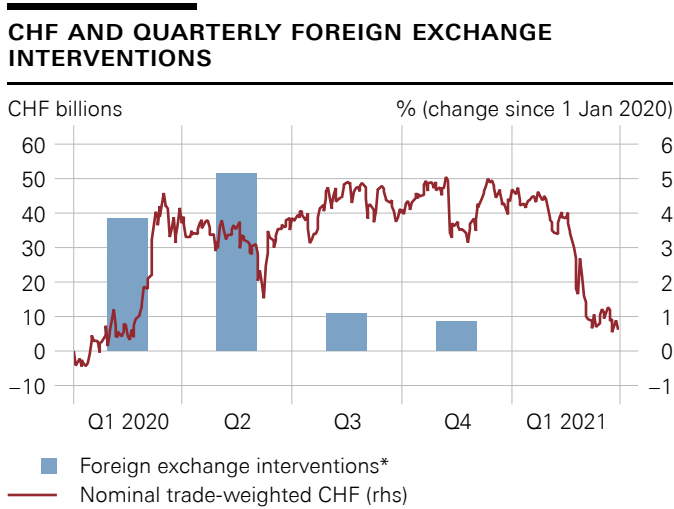
its quarterly monetary policy assessment of 19 March 2020, the SNB therefore kept its policy rate at -0.75% and announced that it was intervening more strongly in the foreign exchange market. Figure 7 shows that the SNB ultimately purchased foreign exchange worth CHF 110 billion (about 15% of GDP) in 2020, mostly in the first two quarters when the appreciation pressure was strongest.

FIGURE 6 NEGATIVE POLICY RATE SINCE 2015



Source: Bloomberg, SNB.

FIGURE 7 SNB STEPS UP FX INTERVENTIONS TO COUNTER APPRECIATION PRESSURE



Note: * to be released end-Q2 2021.

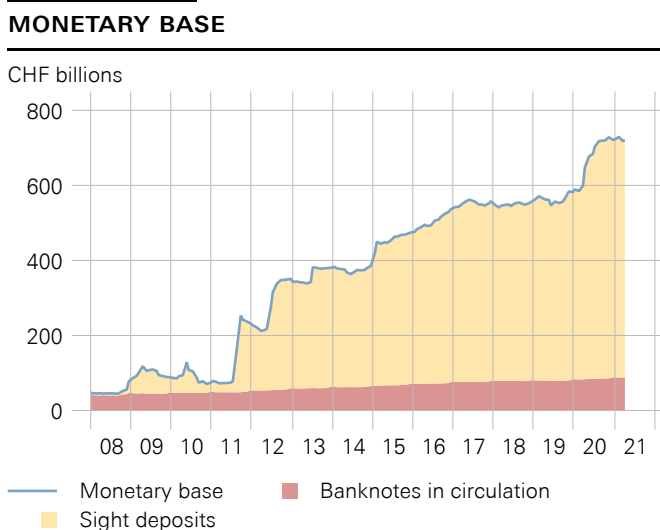
Source: Bloomberg, SNB.

FX interventions versus quantitative easing

One difference between the monetary policy response in Switzerland and that in many large economies, both in the years since the global financial crisis and during the Covid-19 pandemic, is that the central banks of major currency areas have implemented extensive asset purchase programmes (known as quantitative easing, or QE). By contrast, the SNB has intervened in the foreign exchange market. There are several reasons for this. First, the capital market in Switzerland is relatively small, which naturally limits the size of a QE programme. Second, compared with the relevance of bank loans, the capital market in Switzerland plays a subordinate role in the transmission of monetary policy as only comparatively few, large companies use it to finance themselves. Third, in Switzerland, the upward pressure on the Swiss franc has been the main reason for the at times very low inflation, and foreign exchange market interventions directly address this problem.

As for all monetary policy instruments, a continuous cost-benefit analysis of foreign exchange interventions is vital. While there is the benefit of preventing an excessive appreciation of the Swiss franc and thereby stabilising price and economic developments, foreign exchange market interventions also entail costs for the SNB. The SNB's balance sheet and its investments in foreign currencies have risen sharply, thereby increasing the risk of losses. To attenuate these risks, the SNB diversifies its foreign exchange investments and holds a significant proportion of its assets in stocks.

FIGURE 8 FX INTERVENTIONS LEAD TO AN EXPANSION IN LIQUIDITY



Source: SNB.

The SNB's experience shows that foreign exchange market interventions and the negative interest rate are essential monetary policy instruments for a small open economy with a safe-haven currency in a global low interest rate environment. The combination of these

two instruments results in fewer undesirable side effects overall than concentrating on just one of them, and the two reinforce one another. Foreign exchange interventions have substantially increased banks' liquidity positions with the SNB over time (Figure 8). This has two effects. First, banks have to pay more negative interest on their central bank reserves. This encourages them to lower their deposit rates and thus reduces the demand for Swiss francs. Second, since banks also try to lower their costly holdings of excess reserves, they extend credit more freely to firms.

Measures to support bank lending

A key element of Switzerland's economic policy response to the Covid-19 crisis was to ensure the flow of credit to the economy. Many companies faced a collapse in demand or had to suspend business due to the measures taken to contain the virus. With revenues falling but costs still being incurred, these firms faced a sudden and extreme shortfall in liquidity. Short-time working helped to cover wage payments, but not other costs (such as rent). Without fast access to bridging loans, many firms would have had to file for bankruptcy. Credit needed to be affordable for firms to ensure take-up. Furthermore, it needed to reach the many small firms that form the backbone of the Swiss economy (more than 92% of Swiss companies have fewer than ten employees). These firms do not have access to the capital market, and most of them did not have an existing credit relationship with a bank.

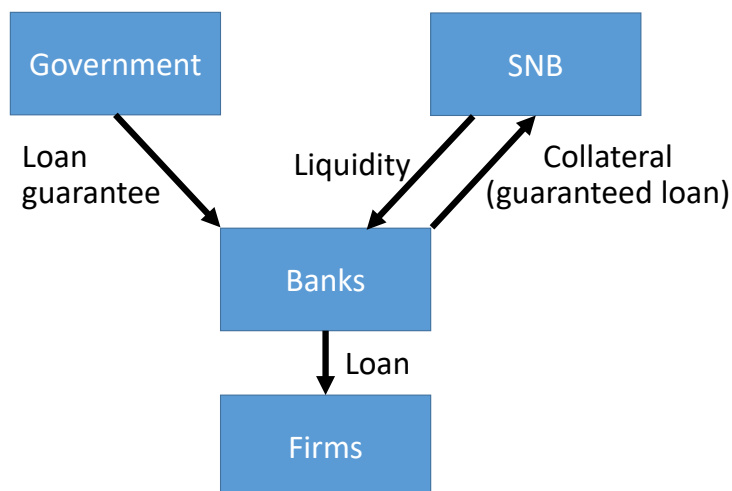
To bridge firms' liquidity shortfalls resulting from the Covid-19 pandemic, the federal government, the SNB, FINMA and the commercial banks established the Covid-19 loan programme. The programme was announced at a joint press conference on 25 March 2020. Figure 9 illustrates how the parties worked together to ensure a fast and effective flow of credit to companies.

- Commercial banks extended loans to firms. In this way, the banks' expertise and customer networks could be used to quickly channel credit to the economy.
- The federal government guaranteed the loans with a budget of CHF 20 billion, or 2.8% of GDP (later increased to CHF 40 billion).
- The SNB provided liquidity to banks through the creation of the SNB Covid-19 refinancing facility (CRF). Banks could post government-guaranteed Covid-19 loans as collateral to obtain liquidity from the SNB at the policy rate of -0.75% .⁵ This also corresponded to the interest charged on banks' reserves. Therefore, the liquidity created through the CRF was cost-neutral for the banking sector.⁶

5 In May 2020, the CRF was expanded to allow for a broader range of eligible collateral, including, for example, claims secured by loan guarantees or credit default guarantees granted by cantons to cushion the economic impact of the Covid-19 pandemic.

6 Since January 2015, the SNB has been charging banks and other financial institutions interest of -0.75% on the sight deposits that they hold with the SNB. To keep the burden imposed on the banking system at a minimum, the SNB grants exemption thresholds when calculating these interest payments.

FIGURE 9 COVID-19 LOAN PROGRAMME



- The guarantees by the government and the refinancing at the policy rate by the SNB were crucial to ensuring the banks' willingness to extend credit in a situation of extreme economic uncertainty, and to do so on generous terms and to small companies without pre-existing credit relationships. The majority of loans had an interest rate of 0%.
- To give banks more flexibility to grant loans, the SNB, after consultation with FINMA, asked the Federal Council to deactivate the countercyclical capital buffer. The Federal Council promptly accepted this recommendation. At the same time, FINMA adjusted the leverage ratio calculation by temporarily excluding central bank reserves.
- Furthermore, the SNB raised the exemption threshold determining what fraction of banks' reserves are subject to the negative interest rate. This reduced banks' costs and thus increased their capacity to grant loans.⁷

The programme was open to firms with an annual turnover of less than CHF 500 million and that had been founded before February 2020. The vast majority of Swiss firms were thus eligible.⁸ Companies could receive loans of up to 10% of their annual turnover, with a maturity of five years.⁹ Loans of up to CHF 500,000 were fully guaranteed by the government and carried an interest rate of 0% for the first year.¹⁰ For larger 'Covid-19

7 The SNB raised the factor that determines the level of the exemption threshold from 25 to 30. For details, see for example the SNB Annual Report 2020, Chapter 2.3, available on the SNB website.

8 Fuhrer et al. (2020) report that only approximately 300 out of a total of 600,000 firms were too large to participate.

9 In cases of hardship, the loan maturity can be extended by two years.

10 For subsequent years, the interest rate would be determined by the government and reflect market conditions.

Plus' loans, 85% of the loan was guaranteed by the government.¹¹ Covid-19 loans came with several conditions designed to ensure that funds would be used to cover potential liquidity shortfalls due to the effects of Covid-19, and not misused for other purposes.¹²

Loan applications were straightforward and simple. Firms could apply to their bank, with no previous credit relationship required. The majority of Swiss firms had no bank loans before the pandemic. A documented credit history and detailed financial documentation are usually required when applying for credit. Both are often not available for small and for young firms. Loans up to CHF 500,000 were granted quickly and with only minimal checks, and funds were typically disbursed within one day. Fuhrer et al. (2020) note that with little or no credit risk (due to government guarantees) and without liquidity risk and costs (due to the SNB's CRF), banks had no incentives to reject loans.

The programme came into effect the day after its announcement on 25 March 2020. Loan applications were possible until 31 July 2020. Figure 10 shows that loans were rolled out quickly. Just one day after the announcement, more than 7,500 firms had already applied for a loan. Within the first week after the start of the programme, one in ten Swiss companies had received a loan. This figure kept rising, reaching a good 20% of all companies, with a total loan volume of CHF 17 billion, or about 2.4% of GDP. Fast credit provision reduced uncertainty, not only on the part of firms but also on the part of employees. Figure 11 shows that the Covid-19 loan programme reached small firms as intended, with about 75% of loans going to firms with fewer than five employees. The SNB's CRF was important in allowing banks to grant credit cheaply. About two-thirds of the loan volume was refinanced via the CRF.

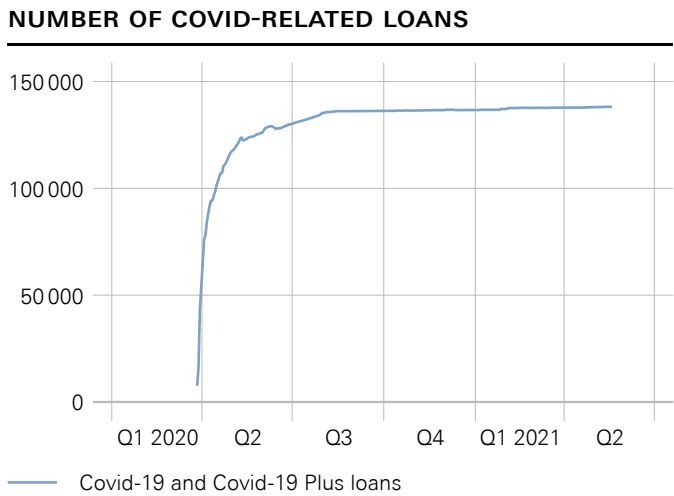
Some studies have analysed the effectiveness of the Swiss Covid-19 loan programme. Fuhrer et al. (2020) provide evidence that the programme was well targeted as regards reaching those firms that were most affected by the pandemic. Take-up of Covid-19 loans was highest for firms most exposed to the effects of the pandemic, as measured by the impact of lockdown restrictions on their activity, a finding confirmed by Brühlhart et al. (2020). Moreover, Kaufmann (2020) shows that the increased lending supply thanks to the Covid-19 loan programme reduced unemployment.

One concern with a loan programme designed to provide cheap and easy access to funding was that it could allow firms with low profitability and high leverage before the pandemic, which might not have been viable in the long term even if the pandemic had not hit, to survive, thus preventing necessary restructuring processes. Fuhrer et al. (2020) show that pre-existing 'zombie firms' were not more likely to participate in the programme than other firms. Zoller-Rydzek and Keller (2021) find no evidence that the Covid-19 loan programme created such firms.

11 The loan volume in excess of CHF 500,000 carried an interest rate of 0.5%, with the interest rate on the remaining 15% being determined by the bank.

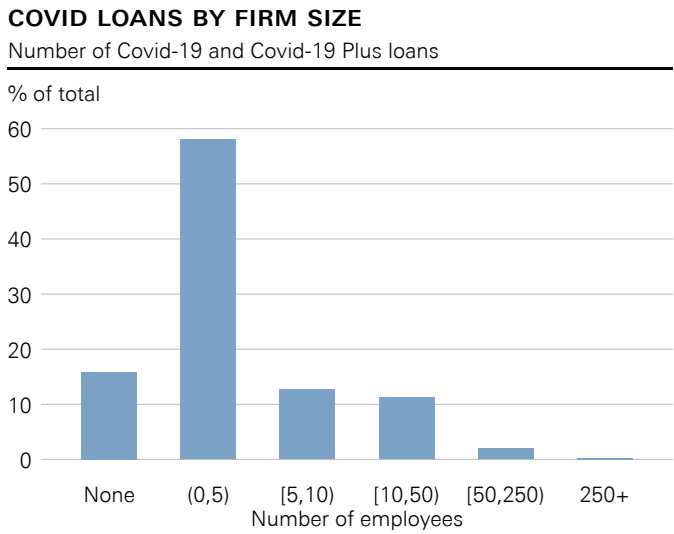
12 For example, Covid-19 loans could not be used for investment (other than replacement investment) or to refinance private or shareholder loans. Firms were also prohibited from paying dividends or reimbursing capital contributions.

FIGURE 10 QUICK ROLLOUT OF COVID-19 LOANS



Note: Last date: 19 May 2021.
Source: SECO.

FIGURE 11 COVID-19 LOANS REACH SMALL COMPANIES



Source: JANUS.

CONCLUSION

The Covid-19 pandemic led to a sharp economic slowdown in Switzerland. One difference between Switzerland and most other countries was that the pandemic led to safe-haven appreciation pressure on the Swiss franc, which further dampened economic activity and inflation. With policy rates already negative at the start of the pandemic, this situation represented a challenge to Swiss monetary policy.

In response to this crisis, the SNB countered appreciation pressure on the Swiss franc by maintaining its policy rate at -0.75% and increasing its foreign exchange interventions. Negative interest rates also contributed to favourable financing conditions for firms and the public sector. Crucially, a joint package of government guarantees for bank loans, central bank liquidity provision, and regulatory relief helped to ensure the fast provision of credit on generous terms to small firms hit by liquidity shortfalls, this in a time of extraordinary uncertainty. The close cooperation between the federal government, the SNB, FINMA and the commercial banks was unprecedented, and key for the success of this programme. The time from the conception to the announcement and operation of the programme was extremely short.

The Covid-19 loan programme and the CRF were critical in a situation of temporary liquidity shortages due to high uncertainty and strict containment measures. Now that the recovery is underway, persistent and perhaps permanent structural economic changes brought about by Covid-19 pose a different challenge. The creativity and adaptability of companies is crucial for the Swiss economy to rise to this challenge, as are structural policies that foster entrepreneurship through good framework conditions. This is the best way back to sustainable growth, and a prerequisite for broad-based prosperity and social stability.

REFERENCES

- Brühlhart, M, R Lalive, T Lehmann and M Siegenthaler (2020), "COVID-19 financial support to small businesses in Switzerland: evaluation and outlook", *Swiss Journal of Economics and Statistics* 156(15): 1-13.
- Fink, F, L Frei, C Grisse, T Maag and T Zehnder (2019), "The response of the Swiss franc to SNB policy rate changes", *SNB Quarterly Bulletin* 2020/1: 36-41.
- Fuhrer, L M, M-A Ramelet and J Tenhofen (2020), "Firms' participation in the Covid-19 loan programme", SNB Working Paper 25/2020.
- Kaufmann, D (2020), "Does government-backed lending prevent unemployment? An assessment of the Swiss Covid-19 lending program", IRENE Working Papers 20-10.

Jordan, T J (2020a), “Small country – big challenges: Switzerland’s monetary policy response to the coronavirus pandemic”, 2020 IMF Michel Camdessus Central Banking Lecture.

Jordan, T J (2020b), Introductory remarks at a news conference on 28 March (www.snb.ch/en/mmr/speeches/id/ref_20200328_tjn).

Jordan, T J (2020c), Introductory remarks at a news conference on 18 June (www.snb.ch/en/mmr/speeches/id/ref_20200618_tjn).

Jordan, T J (2020d), Introductory remarks at a news conference on 17 December (www.snb.ch/en/mmr/speeches/id/ref_20201217_tjn).

Schelling T and P Towbin (2020), “Negative interest rates, deposit funding and bank lending”, SNB Working Paper 5/2020.

Swiss National Bank (2021), *Annual Report* (www.snb.ch/en/i/about/pub/annrep/id/pub_annrep_2020).

Zoller-Rydzek, B and F Keller (2020), “COVID-19: guaranteed loans and zombie firms”, *CESifo Economic Studies* 66(4): 322-364.

ABOUT THE AUTHOR

Thomas J. Jordan is Chairman of the Governing Board of the Swiss National Bank (SNB). He received his PhD in economics from the University of Bern in 1993. Following a three-year post-doctoral research position at the Department of Economics at Harvard University, he joined the SNB as an Economic Advisor in 1997. The University of Bern appointed him lecturer in 1998 and honorary professor in 2003, and he received an honorary doctorate from the University of Basel in 2017. In 2007, the Federal Council appointed Thomas J. Jordan to the position of Member of the SNB’s Governing Board. In 2010, he was appointed Vice Chairman and in 2012 Chairman of the Governing Board. He is Governor of the International Monetary Fund (IMF) for Switzerland and member of the Board of Directors of the Bank for International Settlements (BIS) in Basel. Thomas J. Jordan represents Switzerland in the Plenary and the Steering Committee of the Financial Stability Board (FSB). He is also Chair of the FSB’s Standing Committee on Budget and Resources (SCBR), as well as of the G10 Central Bank Counterfeit Deterrence Group (CBCDG).

CHAPTER 8

The Bank of England's response to Covid-19

137

Ben Broadbent¹

Bank of England

INTRODUCTION

The Covid-19 pandemic has caused extraordinary challenges to public health and to economies around the world. In the United Kingdom, economic activity fell precipitously as the pandemic took hold and social distancing was needed to contain its spread. That early phase was also characterised by a sharp deterioration in liquidity conditions in some financial markets, including those for sovereign debt. During the first phase last spring, whole areas of the economy were essentially closed down.

In response to the pandemic, the UK Government launched a range of initiatives to support businesses and households through the economic disruption.

The Bank of England ('the Bank') and its three policy committees – the Monetary Policy Committee (MPC), Financial Policy Committee (FPC), and Prudential Regulation Committee (PRC) – took rapid complementary actions to support the economy and the functioning of financial markets. The MPC cut interest rates, offered banks and building societies long-term funding at low rates, and increased asset purchases to lower the cost of borrowing for households and businesses. Alongside changes to some of the Bank's liquidity insurance operations, asset purchases also helped to support the functioning of financial markets. The FPC and PRC took actions to help banks expand lending, by reducing the amount of capital they needed to set against their lending to UK businesses and households, and by publishing guidance on dividends. And the Bank worked closely with HM Government to support businesses by offering them cash for their corporate debt to help mitigate any cash flow problems and enable banks and building societies to focus on supporting small and medium-sized companies.

¹ With thanks to Katie Alexander, Alexandra Briers, Alan Castle, Max English, Edward Manuel, Rebecca Maule, Mette Nielsen, Heena Samani and Fay Simpkins for their assistance.

As Covid cases fell, global activity recovered materially in 2020 Q₃ from low levels. That recovery went into reverse late last year, and in the first quarter of this, when the UK experienced a second wave of infections and the government re-imposed severe restrictions. And, at that point, the MPC took further monetary policy actions to support economic activity and to help ensure the sustainable return of inflation to the target.

However, and although they were no less effective at bringing down infection rates, those restrictions seemed to have slightly less of an impact on economic activity than during the first wave, perhaps because firms and individuals had adapted somewhat. And, in the meantime, in common with many advanced economies, the UK's Covid-19 vaccination programme is well underway. That has improved the economic outlook. Significant uncertainties remain but, mirroring what happened last summer, economic activity is projected to recover relatively sharply through the course of this year, as the impact of the pandemic wanes. That recovery will be supported by the Bank's policy actions; those actions should also contribute to minimising the longer-term damage arising from Covid.

The remainder of this chapter describes the actions by the Bank of England and its policy committees in more detail, covering monetary policy, liquidity provision, credit policy, cooperation with fiscal authorities, and macro and microprudential policies. Table 1 sets out the main policy actions taken during 2020 in chronological order.

TABLE 1 CHRONOLOGY OF THE MAIN POLICY DECISIONS

Date of policy announcement	Policy action	Description
11 March 2020	The MPC cuts Bank Rate from 0.75% to 0.25%	The MPC voted unanimously to reduce Bank Rate by 50 basis points to 0.25%.
11 March 2020	The Bank of England announces a new Term Funding Scheme with additional incentives for SMEs (TFSME)	The TFSME was designed to increase the availability of funding for banks and thus lending, especially to small and medium-sized enterprises.
11 March 2020	The FPC cuts the UK Countercyclical capital buffer (CCyB) to 0%	The cut in the CCyB supported the ability of banks to supply the credit needed to bridge a potentially challenging period. The FPC also made it clear that it expected to maintain the 0% rate for at least 12 months.
11 March 2020	Statement by the Prudential Regulation Authority (PRA) accompanying measures by the FPC	This statement followed the FPC's decision to set the UK CCyB rate at 0%. The PRA expected firms not to increase dividends and other distributions in response to this policy action and would monitor firms' distributions against this expectation.

Date of policy announcement	Policy action	Description
17 March 2020	HM Treasury and the Bank of England announce the Covid Corporate Financing Facility (CCFF)	The CCFF supported liquidity among larger firms, helping them to bridge coronavirus disruption to their cash flows through the purchase of short-term debt in the form of commercial paper.
19 March 2020	The MPC increases the target stock of asset purchases to £645 billion	The MPC voted unanimously for the Bank of England to increase the stock of purchased UK government bonds and sterling non-financial investment-grade corporate bonds, financed by the issuance of central bank reserves, by £200 billion to a total of £645 billion.
19 March 2020	The MPC cuts Bank Rate from 0.25% to 0.1%	The MPC voted unanimously to reduce Bank Rate by 15 basis points to 0.1%.
24 March 2020	The Bank activates its Contingent Term Repo Facility (CTRF)	The CTRF helped to ease the sudden demand for liquidity in the March 'dash for cash' episode.
31 March 2020	The PRA issues a statement on dividend payments, share buybacks and cash bonuses	The PRA welcomed the decisions by the boards of the large UK banks to suspend dividends and buybacks on ordinary shares until the end of 2020, and to cancel payment of any outstanding 2019 dividends in response to a request from the PRA.
18 June 2020	The MPC increases the target stock of asset purchases to £745 billion	The MPC voted 8-1 for the Bank of England to increase the target stock of purchased UK government bonds, financed by the issuance of central bank reserves, by an additional £100 billion, to take the total stock of asset purchases to £745 billion.
5 November 2020	The MPC increases the target stock of asset purchases to £895 billion	The MPC voted unanimously to increase the target stock of purchased UK government bonds, financed by the issuance of central bank reserves, by an additional £150 billion, to take the total target stock of asset purchases to £895 billion.
10 December 2020	The PRA issues a statement on dividend payments, share buybacks and cash bonuses	The PRA judged that there was scope for banks to recommence some distributions should their boards choose to do so, within an appropriately prudent framework.

MONETARY POLICY

Following the spread of Covid-19 in early 2020, the MPC held a special meeting ending on 10 March, ahead of its scheduled meeting ending on 25 March. The Committee agreed that, in those extraordinary circumstances, and alongside other policy responses, there was a role for monetary policy to help UK businesses and households bridge a sharp but ultimately temporary reduction in activity. Monetary policy stimulus would help to keep firms in business and people in jobs, and help to prevent a temporary disruption from causing longer-lasting economic harm.

At that special meeting, the MPC voted to reduce Bank Rate by 50 basis points, from 0.75% to 0.25%. The MPC also voted for the Bank of England to introduce a new Term Funding Scheme with additional incentives for small and medium-sized enterprises (TFSME), financed by the issuance of central bank reserves. That scheme offered banks four-year funding of at least 5% of participants' stock of lending to non-financial businesses and households at interest rates at, or very close to, Bank Rate. Banks were able to access another pound of funding for every pound that their non-SME net lending expanded, with five pounds available for each pound of positive net lending to SMEs.

In light of actions to tackle the spread of the virus, and evidence relating to the global and domestic economy and financial markets, the MPC held an additional special meeting on 19 March 2020. In the run-up to that meeting, in common with a number of other advanced economy bond markets, conditions in the UK gilt market had deteriorated as investors sought shorter-dated instruments that were closer substitutes for highly liquid central bank reserves. As a consequence, UK and global financial conditions had tightened.

As a result, the MPC judged that a further package of measures was warranted to meet its statutory objectives. It therefore voted unanimously to increase the Bank of England's holdings of UK government bonds and sterling non-financial investment-grade corporate bonds by £200 billion to a total of £645 billion, financed by the issuance of central bank reserves. It was announced that the majority of additional asset purchases would comprise UK government bonds, and that purchases would be completed as soon as was operationally possible.

At that special meeting on 19 March, the MPC also voted to reduce Bank Rate by 15 basis points, from 0.25% to 0.1%, and that the Bank of England should enlarge the TFSME scheme. Specifically, the initial borrowing allowance of the scheme was increased from 5% to 10% of participants' stock of real economy lending. The Bank announced in May and September 2020 that TFSME participants would be able to extend the term of some of their TFSME funding to continue to support lending to SMEs through the UK Government's Bounce Back Loan Scheme (BBLs). In December 2020, the Committee agreed to a six-month extension to the TFSME, including extending the drawdown period of the scheme until 31 October 2021.

The reductions in Bank Rate in March 2020 were designed to help to support business and consumer confidence at a difficult time, to bolster the cash flows of businesses and households, and to reduce the cost, and improve the availability, of finance. With interest rates low, however, it was likely to have been difficult for some banks and building societies to reduce deposit rates much further, which in turn could limit their ability to cut their lending rates. In order to mitigate these pressures and maximise the effectiveness of monetary policy, the TFSME provided funding to banks and building societies at rates at, or very close to, Bank Rate. Such a scheme also provided participants with a cost-effective source of funding to support lending to the real economy, and provided insurance against adverse conditions in bank funding markets. A scheme that provided additional funding to banks that expanded net lending could also support the supply of credit to businesses and households. The MPC judged that it was particularly important to incentivise lending to SMEs that typically bore the brunt of contractions in the supply of credit during periods of heightened risk aversion and economic downturns.

Following those actions in March 2020, Bank Rate has since been maintained at 0.1%.

The MPC included a box in the August 2020 *Monetary Policy Report* setting out the potential issues that a negative policy rate could raise and how these could impact the effectiveness of negative rates as a monetary policy tool (Bank of England 2020: Box 1). This concluded that the appropriate policy tools for achieving the MPC's objectives could change over time depending on economic and financial conditions. At the time, banks' balance sheets would be negatively affected by the period of severe economic disruption arising from Covid-19. And they had an important role to play in helping the UK economy recover by providing finance for individuals and companies. As a result, negative policy rates at the time could be less effective as a tool to stimulate the economy. That said, the wider economy and banks' balance sheets would be boosted by stimulus. The net effect of negative policy rates depended on these, among other, factors. Subsequently, and as mentioned in the September 2020 MPC minutes, the Committee was briefed on the Bank of England's plans to explore how a negative Bank Rate could be implemented effectively, should the outlook for inflation and output warrant it at some point during this period of low equilibrium rates. The Bank of England and the Prudential Regulation Authority began structured engagement on the operational considerations in 2020 Q4.

Since March 2020, the MPC has provided further monetary policy stimulus to respond to the severe economic and financial disruption caused by the spread of Covid-19, by increasing the target stock for purchases of UK government bonds and sterling non-financial investment-grade corporate bonds.

At its meeting ending on 17 June 2020, the MPC voted for the Bank of England to increase the target stock of purchased UK government bonds, financed by the issuance of central bank reserves, by an additional £100 billion, to take the total stock of asset purchases to £745 billion. And at its meeting ending on 4 November 2020, the MPC voted to increase the target stock of purchased UK government bonds by an additional £150 billion, to take

the total stock of government bond purchases to £875 billion and the target stock of total asset purchases to £895 billion. That programme of purchases started in January 2021 and the Committee expected it to be completed by around the end of 2021.

The purchase pace for these programmes of asset purchases was slower than the purchases made during the initial stages of the March 2020 programme, reflecting the stabilisation of liquidity conditions since then. The MPC had continued to note, however, that should conditions worsen materially again, the Bank stood ready to increase the pace of purchases to ensure the effective transmission of monetary policy.

All of these actions reflected monetary policy's role in supporting cashflows, demand, and financial conditions. In an environment of heightened uncertainty, some MPC members have also envisaged a role for monetary policy in seeking to mitigate the potential impact of more adverse economic scenarios. And some MPC members have noted that risk-management considerations favoured a prompt response to downside risks in order to ensure a sustained return of inflation to the target.

The MPC has also introduced guidance to support its policy stance. At the August 2020 MPC meeting and subsequently, the Committee has stated that it does not intend to tighten monetary policy at least until there is clear evidence that significant progress is being made in eliminating spare capacity and achieving the 2% inflation target sustainably.

LIQUIDITY PROVISION

The Bank offers a number of liquidity insurance operations that can supply central bank reserves. Most of these were active prior to the pandemic, but the Bank was able to change their frequency and/or generosity, and introduce new schemes as needed.

The Indexed Long-Term Repo (ILTR) facility had already moved from monthly to weekly frequency in 2019 to provide added flexibility in the Bank's provision of liquidity insurance during a period of Brexit-related uncertainty. The facility lent out £22.5 billion of reserves for six-month maturities in March and April 2020, compared with £8 billion lent in the prior six months.

On 24 March, the Bank also activated its Contingent Term Repo Facility (CTRF), committing to lend unlimited amounts of sterling at close to Bank Rate for one- and three-month maturities, against a broad range of collateral. This move was a temporary enhancement of the Bank's sterling liquidity insurance facilities, running alongside regular sterling market operations to help alleviate frictions observed in money markets. These operations – alongside the foreign currency operations described below – acted as a backstop to repo rates and, together with the passing of the March quarter end, helped bring rates back to more normal levels. In light of continued improvements in funding market conditions, CTRF operations were ceased on 26 June 2020.

To support its financial stability objective, the Bank also uses swap lines with the Bank of Canada, the European Central Bank, the Federal Reserve, the Bank of Japan and the Swiss National Bank to offer short-term repo transactions in selected other currencies. Prior to March 2020, the Bank offered to lend US dollars and euros once a week for a maturity of one week. In March, the standing swap line central banks agreed on a package of measures to mobilise the US dollar swap lines more fully: extending the maturity, reducing the price, and increasing the frequency of our operations to stabilise stresses in FX markets. The package was announced on Sunday 15 March, and extended on 20 March. At peak frequency, the Bank was running six US dollar operations a week. These operations helped significantly to reduce the cost of sourcing dollars via FX swaps, which had been at the highest level since the 2008 financial crisis. From 1 September, the standing swap line central banks agreed to reduce the frequency of the one-week maturity tenor US dollar swap line operations to once a week. This was due to continuing improvements in US dollar funding conditions and low demand at the one-week maturity US dollar swap line operations.

CREDIT POLICY

HM Treasury and the Bank launched the Covid Corporate Financing Facility (CCFF) on 23 March to provide additional help to firms to bridge through Covid-related disruption to their cash flows. The CCFF provided funding to businesses by purchasing commercial paper (CP) of up to one-year maturity, issued by firms making a material contribution to the UK economy. It has helped businesses across a range of sectors to pay wages and suppliers, even while experiencing severe disruption to cashflows. Eligibility to join the scheme was based on credit ratings prior to the Covid shock, although purchases of CP were assessed using more recent ratings and priced at rates prevailing prior to March 2020. The CCFF was funded by the issuance of additional central bank reserves but was set up in a separate legal entity from the Bank and from the APF. The MPC continued to decide on the overall amount of asset purchases financed by central bank reserves.

On 22 September 2020, the Bank and HM Treasury announced that the CCFF would close to new purchases on 23 March 2021, one year after its launch.

COOPERATION WITH FISCAL AUTHORITIES

At the Bank of England, monetary and prudential policies are conducted by the three policy committees: the MPC, FPC and PRC. Their remits are set by the government but the committees are operationally independent of the government and accountable directly to the UK parliament. There is nonetheless close communication between the fiscal authority and the central bank even in normal times. For example, a Treasury observer attends MPC policy meetings, there is a non-voting member of the FPC from

the Treasury and the Governor and Chancellor speak regularly about the economy. That communication was more important still at the height of the crisis last spring, notably in the design and launch of the CCFE.

During 2020 there was a significant expansion in the government deficit at the same time as an easing in monetary policy, including through asset purchases, by the MPC. This is only to be expected during a severe downturn, even (and perhaps especially) when the monetary authority is targeting inflation. During the inflation targeting period, the government balance and the monetary stance – each set by independent authorities – have both been highly cyclical and for that reason correlated with each other. The MPC will continue to set monetary policy in order to meet its own remit. Through this period, measures of medium- and longer-term inflation expectations in sterling financial markets have been broadly stable, indicating continuing confidence in the UK's macroeconomic framework.

MACROPRUDENTIAL POLICY

On 11 March 2020, the FPC reduced the UK CCyB rate to 0% of banks' exposures to UK borrowers with immediate effect. The rate had been 1% and had been due to reach 2% by December 2020. The FPC also made clear that it expected to maintain the 0% rate for at least 12 months. Due to the usual 12-month implementation lag, any subsequent increase would therefore not be expected to take effect until March 2022 at the earliest. In December 2020, the FPC updated its guidance on the path for the UK CCyB rate by announcing that it expected it to remain at 0% until at least 2021 Q4 (so that any subsequent increase would not be expected to take effect until 2022 Q4 at the earliest).

The cut in the CCyB supported the ability of banks to supply the credit needed to bridge a potentially challenging period, and reinforced the FPC's expectation that all elements of the substantial capital and liquidity buffers that had been built up by banks could be drawn down as necessary. The release of the CCyB amounted to £23 billion of capital, which could be used to support up to £190 billion of bank lending to businesses. That was equivalent to 13 times banks' net lending to businesses in 2019. Guidance around the future CCyB rate was also provided to support further the use of banks' capital buffers.

Other macroprudential policy actions were also designed to ensure banks could continue to support the real economy through the shock. The FPC welcomed the PRA's supervisory guidance that banks should not increase dividends or other distributions in response to the cut in the CCyB rate. This was intended to provide additional capital headroom that could be used to support the real economy. And at its policy meeting on 19 March the FPC, together with the PRC, agreed to cancel its 2020 annual stress test of major UK banks and building societies to help lenders focus on meeting the needs of UK households and businesses via the continuing provision of credit.

MICROPRUDENTIAL POLICY

On 11 March 2020, the PRA issued a statement accompanying the FPC's decision to set the UK CCyB rate at 0%. The PRA expected firms not to increase dividends and other distributions in response to this policy action and would monitor firms' distributions against this expectation. The decision by the PRA was a sensible precautionary step given the unique role that banks needed to play in supporting the wider economy through a period of economic disruption, alongside the extraordinary measures being taken by the authorities. The PRA did not expect the capital preserved to be needed by the banks in order to maintain adequate capital positions, but the extra headroom should help the banks support the economy through 2020.

On 31 March 2020, the PRA welcomed the decisions by the boards of the large UK banks to suspend dividends and buybacks on ordinary shares until the end of 2020, and to cancel payment of any outstanding 2019 dividends in response to a request from the PRA.

On 10 December 2020, the PRA judged that there was scope for banks to recommence some distributions should their boards choose to do so, within an appropriately prudent framework.

REFERENCES

Bank of England (2020), *Monetary Policy Report, August* (www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2020/august/monetary-policy-report-august-2020).

ABOUT THE AUTHOR

Ben Broadbent is Deputy Governor, Monetary Policy at the Bank of England. He has specific responsibility for monetary policy, including monetary analysis, banknotes, and data & analytics transformation. He has shared responsibility for international macroeconomic analysis, strategy and engagement. Ben is a member of the Monetary Policy Committee, Financial Policy Committee and Prudential Regulation Committee. Previously, he was an external member of the Monetary Policy Committee (June 2011 – June 2014). Prior to that, Ben was Senior European Economist at Goldman Sachs (2000-2011), during which time he researched and wrote widely on the UK economy and monetary policy. Before that, he was formerly an Assistant Professor of Economics at Columbia University (1997- 2000) and an Economic Adviser at HM Treasury (1989-1991 and 1993-1996). He has a BA in Economics from Cambridge University and a PhD in Economics from Harvard University, where he was a Fulbright Scholar.

CHAPTER 9

The COVID-19 crisis and the Federal Reserve's policy response

147

Richard H. Clarida, Burcu Duygan-Bump and Chiara Scotti¹

Federal Reserve Board

INTRODUCTION

At the time of this writing, one year has passed since the COVID-19 pandemic arrived on the shores of the United States. Since then, the virus has caused tremendous human and economic hardship across our country and around the world. The pandemic and the mitigation efforts put in place to contain it delivered the most severe blow to the US economy since the Great Depression. GDP collapsed at an annual rate of over 30% in the second quarter of 2020. More than 22 million jobs were lost in just the first two months of the crisis, and the unemployment rate rose from a 50-year low of 3.5% in February to a postwar peak of almost 15% in April of 2020. A precipitous decline in aggregate demand pummeled the consumer price level. The resulting disruptions to economic activity significantly tightened financial conditions and impaired the flow of credit to US households and businesses.

The fiscal and monetary policy response in the United States to the COVID crisis was unprecedented in its scale, scope, and speed. Legislation passed by Congress in March 2020, December 2020, and March 2021 provided a total of nearly \$5.8 trillion in fiscal support to the US economy – about 28% of US GDP.²

The Federal Reserve acted decisively and with dispatch to deploy all the tools in its conventional kit and to design, develop, and launch within weeks a series of innovative facilities to support the flow of credit to households and businesses (Table 1). The Federal Reserve's policy actions in response to the COVID crisis can be grouped into four broad categories. In the first category, we would include conventional monetary policy measures such as cutting interest rates, offering forward guidance, and rescaling and

1 The views expressed in this chapter are our own and not necessarily those of other Federal Reserve Board members or Federal Open Market Committee participants. We are grateful to Grace Brang, Hannah Firestone, Akila Forde, and Tyler Pike for excellent research assistance, and to Christopher Karlsten for outstanding editing help. All errors are our sole responsibility.

2 This total includes the roughly \$3 trillion from the spring 2020 bills – the Coronavirus Preparedness and Response Supplemental Appropriations Act 2020, the Families First Coronavirus Response Act, the Coronavirus Aid, Relief, and Economic Security (CARES) Act, and the Paycheck Protection Program and Health Care Enhancement Act – inclusive of the roughly \$0.45 trillion in capitalisation for the Fed lending facilities in the CARES Act; as well as \$0.9 trillion in the stimulus divisions of the Consolidated Appropriations Act, 2021, passed in late December 2020; and \$1.9 trillion in the American Rescue Plan Act of 2021, passed in March 2021.

restarting programmes to purchase Treasury securities and agency mortgage-backed securities (MBS) as well as repurchase agreement (repo) operations. In the second group, we would include measures to provide liquidity and funding to support money market functioning. In the third category, we would include a number of facilities the Federal Reserve launched to support more directly the flow of credit to households, businesses, and state and local governments. And in the fourth group, we would include temporary recalibrations the Federal Reserve made to regulations and supervisory practises to encourage and incentivise banks to support the flow of credit to their household and business customers.³

The facilities the Federal Reserve either relaunched or designed and developed anew in response to the COVID crisis were established under the authority of section 13(3) of the Federal Reserve Act. Under section 13(3), these facilities can be established only in “unusual and exigent circumstances” and with approval of the Treasury Secretary. The US Treasury provided first-loss equity investments in seven of the nine section 13(3) facilities stood up during the COVID crisis.⁴ These Treasury equity investments were funded initially from the traditional Exchange Stabilization Fund (ESF) and then later from funds specifically appropriated to the ESF by the Congress for this purpose in title IV of the Coronavirus Aid, Relief, and Economic Security (CARES) Act. Another key principle respected in the design of the facilities is that they were structured to be backstops, with pricing and terms set to incentivise borrowers to obtain credit, if available, from financial markets and financial institutions so as to restore the flow of credit from private lenders through normal channels.

The chapter is organised as follows. The first section reviews the monetary policy measures, such as interest rate policies, open market operations, and asset purchases. The second section discusses facilities focused on providing liquidity and funding support. The third section discusses the facilities that more directly support the flow of credit to households, businesses, and state and local governments. The fourth section reviews the supervisory and regulatory actions. The fifth section concludes.

3 A complete list of the Federal Reserve's actions in response to COVID-19 can be found on the Federal Reserve Board's website at <https://www.federalreserve.gov/covid-19.htm>. This chapter relies heavily on Board of Governors (2020f, 2020g, 2020h). For additional discussion of the Federal Reserve and other policy actions in response to the COVID crisis, see, among others, Barr et al. (2020), Emmons and Neely (2020), Mizrach and Neely (2020), and Sims and Wu (2020).

4 Section 13(3) of the Federal Reserve Act requires that a lending Reserve Bank be secured to its satisfaction and directs the Board to adopt policies and procedures designed to ensure that the security for emergency loans is sufficient to protect taxpayers from losses. During the global financial crisis, while several of the programs used features to provide such protection, the only facility with Treasury equity was the Term Asset-Backed Securities Loan Facility (TALF), where the US Treasury provided the Federal Reserve with credit protection equal to 10% of the authorised size of the program. For more detailed discussion of the first iteration of TALF, see Campbell et al. (2011).

TABLE 1 TIMELINE OF SELECTED FEDERAL RESERVE ACTIONS DURING THE COVID-19 PANDEMIC

Date	Action	Objective
Monetary policy actions		
3 March 2020	FOMC lowers FFTR by 1/2 percentage point, to 1 to 1-1/4%	To support achieving its maximum-employment and price-stability goals
9 March 2020	Updates the monthly schedule of repo operations	To ensure that the supply of reserves remains ample and to mitigate the risk of money market pressures that could adversely affect policy implementation.
12 March 2020	Introduces new weekly recurring one- and three-month term repo operations	To address the disruption in Treasury financing markets
15 March 2020	FOMC lowers FFTR by 1 percentage point, to 0 to 1/4%, and introduces forward guidance	To support achieving its maximum-employment and price-stability goals
15 March 2020	FOMC to increase its holdings of Treasury and agency mortgage-backed securities by at least \$500 billion and \$200 billion, respectively, over the coming months	To support the smooth functioning of markets for Treasury securities and agency mortgage-backed securities
16 March 2020	Introduces a second daily overnight repo operation and increases the amount offered in each to \$500 billion	To ensure that the supply of reserves remains ample and to mitigate the risk of money market pressures that could adversely affect policy implementation
23 March 2020	FOMC announces it will continue to purchase Treasury securities and agency MBS “in the amounts needed.” It also includes in the purchases agency CMBS for the first time	To support the smooth functioning of markets for Treasury securities and agency mortgage-backed securities
10 June 2020	FOMC announces it will increase holdings of Treasury securities and agency mortgage-backed securities at least at the current pace	To sustain smooth market functioning, thereby fostering effective transmission of monetary policy to broader financial conditions

Date	Action	Objective
16 September 2020	FOMC revises forward guidance on rates	To bring FOMC forward guidance into line with the new policy framework, introduced with the approval in August of the new Statement on Longer-Run Goals and Monetary Policy Strategy
16 December 2020	FOMC introduces guidance on asset purchases	To bring guidance into line with the new policy framework in order to provide accommodation and support the economy
Liquidity and funding operations		
15 March 2020	Discount window: reduction in primary credit rate by 150 basis points to 0.25 percent, and introduction of term loans up to 90 days. Reserve requirements: reduction to 0%, effective on 26 March	For depository institutions to meet unexpected funding needs and, in doing so, to help them meet demands for credit from households and businesses
15 March 2020	FOMC enhances standing US liquidity swap lines with Bank of Canada, Bank of England, Bank of Japan, European Central Bank, and the Swiss National Bank	To lessen strains in global dollar funding markets
17 March 2020	FRB announces Commercial Paper Funding Facility	To support the flow of credit to households and businesses
17 March 2020	FRB announces Primary Dealer Credit Facility	To support smooth market functioning and facilitate the availability of credit to businesses and households
18 March 2020	FRB announces Money Market Mutual Fund Liquidity Facility	To support the flow of credit to households and businesses
19 March 2020	FOMC announces temporary swap lines with 9 additional central banks	To lessen strains in global dollar funding markets
20 March 2020	FOMC increases frequency of 7-day maturity operations of standing swap lines	To lessen strains in global dollar funding markets
31 March 2020	FOMC announces temporary FIMA Repo Facility	To lessen strains in global dollar funding markets

Date	Action	Objective
Tools to provide more direct support for providing credit across the economy		
23 March 2020	FRB announces Term Asset-Backed Securities Loan Facility	To support the flow of credit to consumers and businesses
23 March 2020	FRB announces Primary Market Corporate Credit Facility	To allow companies access to credit so that they are better able to maintain business operations and capacity during the period of dislocations related to the pandemic
23 March 2020	FRB announces Secondary Market Corporate Credit Facility	To provide liquidity for outstanding corporate bonds
23 March 2020	FRB says it expects to announce Main Street Lending Program soon	To facilitate the flow of credit to small businesses so that they can keep their workers on the payroll during the disruptions caused by the coronavirus
9 April 2020	FRB announces Municipal Liquidity Facility	To help state and local governments manage cash flow stresses caused by the coronavirus pandemic
9 April 2020	FRB announces Paycheck Protection Program Liquidity Facility	To bolster the effectiveness of the Small Business Administration's PPP by supplying liquidity to participating financial institutions through term financing backed by PPP loans to small businesses
Banking initiatives		
15 March 2020	FRB encourages banks to use their capital and liquidity buffers as they lend to households and businesses who are affected by the coronavirus	To support the flow of credit to households and businesses
22 March 2020	Agencies provide additional information to encourage financial institutions to work with borrowers affected by COVID-19	To help with the challenges that affect banks, credit unions, businesses, borrowers, and the economy, given the unique and evolving situation

Date	Action	Objective
1 April 2020	FRB announces temporary exclusion of US Treasury securities and deposits at Federal Reserve Banks from the supplementary leverage ratio	To help ease strains in the US Treasury market and continue to facilitate the significant inflow of customer deposits at banks
25 June 2020	FRB announces stress-test results with additional sensitivity analyses	To better identify the potential effects of the pandemic on the capital positions of banks
3 August 2020	Interagency announcement on loan modification	To provide relief to business and individual borrowers during pandemic
18 December 2020	FRB announces second round of stress-test results	To better identify the potential effects of the pandemic on the capital positions of banks

Note: On 23 March 2020, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the program came on 9 April 2020. A complete list of the Federal Reserve's actions in response to COVID-19 can be found on the Federal Reserve Board's website at <https://www.federalreserve.gov/covid19.htm>. FOMC is Federal Open Market Committee; FFR is federal funds rate target range; repo is repurchase agreement; CMBS is commercial mortgage-backed securities; FRB is Federal Reserve Board; FIMA is Foreign and International Monetary Authorities; PPP is Paycheck Protection Program.

Source: Federal Reserve Board.

DEPLOYING THE MONETARY POLICY TOOLKIT

Interest rates

In light of the anticipated effects of COVID-19 on economic activity and on risks to the outlook, at two unscheduled meetings on 3 March and 15 March 2020, the Federal Open Market Committee (FOMC) cut the target range for the federal funds rate by a total of 1½ percentage points, bringing it to the effective lower bound target range of 0 to ¼%. In the statement accompanying the 15 March meeting, the Committee also deployed forward guidance and said that it expected to maintain this target range until it was confident that the economy had weathered recent events and was on track to achieve its maximum-employment and price-stability goals.⁵ At the same time, the Committee noted that it would continue to monitor the implications of incoming information for the economic outlook, including information related to public health, as well as global developments and muted inflation pressures, and that it would use its tools and act as appropriate to support the economy.

Open market operations for safeguarding market functioning

In order to ensure that the supply of reserves remained ample and to support the smooth functioning of the critical funding markets, the Federal Reserve also took actions to expand the supply of short-term funding available to primary dealers to finance their increased holdings of Treasury securities and agency MBS at a time when funding costs from other sources were increasing sharply. In particular, beginning 9 March 2020, following a directive from the FOMC, the Federal Reserve Bank of New York's Open Market Desk increased the size of overnight and term repo operations (Federal Reserve Bank of New York 2020a). The Desk subsequently introduced new weekly recurring one- and three-month term repo operations, introduced a second daily overnight repo operation, and increased the amount offered in each operation (Federal Reserve Bank of New York 2020b, 2020c).

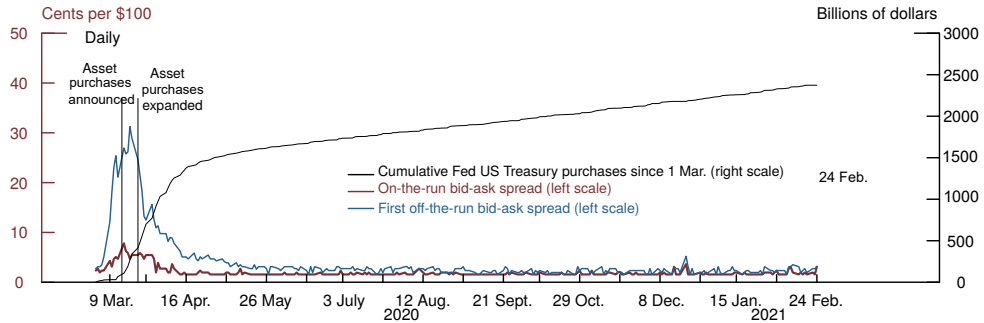
Despite the much larger volume of repo operations, strains in Treasury and agency MBS markets continued to build. On 15 March, the FOMC directed the Desk to increase its holdings of Treasury securities and agency MBS by at least \$500 billion and \$200 billion, respectively. On 23 March, to provide greater flexibility in addressing the strains, the FOMC authorised purchases of those securities in the amounts needed to support smooth market functioning and the effective transmission of monetary policy to broader financial conditions.⁶ The securities targeted for purchase were also expanded to include agency commercial MBS.

5 FOMC statements are available on the Federal Reserve Board's website at <https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm>.

6 On 12 March, the Desk statement also noted that it will shift its \$60 billion reserve management purchases to be conducted across a range of maturities to roughly match the maturity composition of Treasury securities outstanding; see Federal Reserve Bank of New York (2020b).

The scale of asset purchases required to support market functioning declined over the spring as market functioning improved. By the June 2020 meeting, and consistent with the directive from the FOMC, the Desk settled on purchasing at least \$80 billion of Treasury securities and at least \$40 billion of agency MBS per month, which, as of this writing, remains the current pace of purchases.

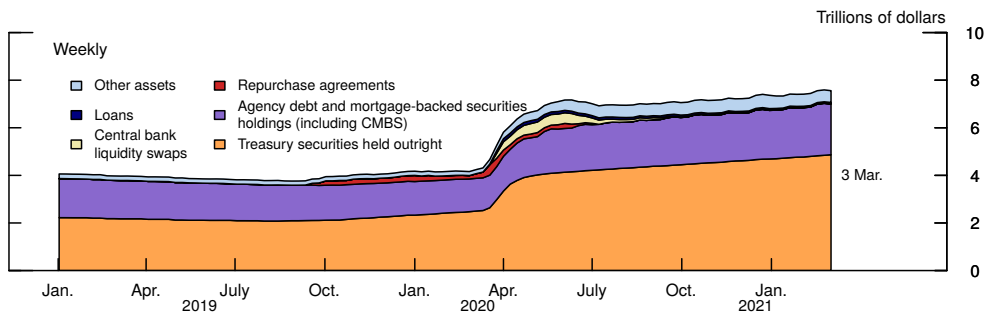
FIGURE 1 INDICATIVE US TREASURY BID-ASK SPREADS



Note: Indicative bid-ask spreads for 10-year Treasury note. On 15 March, the Federal Open Market Committee announced an increase of its holdings of Treasury securities by at least \$500 billion and its holdings of agency mortgage-backed securities (MBS) by at least \$200 billion. On 23 March, the Federal Reserve announced it would continue to purchase Treasury securities and agency MBS in the amounts needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions.

Source: Federal Reserve Bank of New York.

FIGURE 2 FEDERAL RESERVE ASSETS



Note: 'Other assets' include unamortized premiums and discounts on securities held outright, the Commercial Paper Funding Facility, the Secondary Market Corporate Credit Facility, and the Municipal Liquidity Facility. 'Loans' consist of primary, secondary, and seasonal credit as well as other credit and liquidity facilities, including the Primary Dealer Credit Facility, the Money Market Mutual Fund Liquidity Facility, and the Paycheck Protection Program Liquidity Facility. CMBS is commercial mortgage-backed securities.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances".

As a result of the increased repo operations and asset purchases, market functioning improved substantially (Figure 1). Usage of Federal Reserve repo operations peaked on 17 March and then declined steadily as funding strains eased.⁷ As a consequence of these programmes, the size of the Federal Reserve's balance sheet has increased significantly since the onset of the crisis (Figure 2).⁸

Guidance on rates and asset purchases

To counter the severe effects of the pandemic, the FOMC also deployed forward guidance, starting with the 15 March 2020 meeting as mentioned above. In the September 2020 FOMC statement, the Committee provided unprecedented outcome-based forward guidance by indicating that, with inflation running persistently below 2%, its policy would aim to achieve inflation outcomes that keep inflation expectations well anchored at the 2% longer-run goal. In doing so, the Committee noted that it expects to maintain an accommodative stance of monetary policy until these outcomes – as well as the maximum-employment mandate – are achieved. Specifically, the Committee stated that it will be appropriate to maintain the current 0 to ¼% target range for the federal funds rate until labour market conditions have reached levels consistent with the Committee's assessments of maximum employment, until inflation has risen to 2%, and until inflation is on track to moderately exceed 2% for some time.

In December 2020, the FOMC combined its forward guidance for the federal funds rate with enhanced, outcome-based guidance about the asset purchases. In particular, the FOMC indicated that it would continue to increase its holdings of Treasury securities by at least \$80 billion per month and its holdings of agency MBS by at least \$40 billion per month until “substantial further progress” was made toward its maximum-employment and price-stability goals.

These changes to the FOMC forward guidance brought it into line with its new “flexible average inflation targeting” framework as embodied in a revised Statement on Longer-Run Goals and Monetary Policy Strategy approved unanimously on 27 August 2020.⁹ The new framework was the culmination of the Federal Reserve's first-ever comprehensive and public review of the strategy, tools, and communication practises it employs to achieve its congressionally mandated goals of maximum employment and price stability.¹⁰

7 In light of more stable repo market conditions, on 4 May the Desk returned to once-daily overnight repo operations. Further, on 14 May, the Desk discontinued its three-month term repo operations; see Federal Reserve Bank of New York (2020d, 2020e).

8 See the box “Developments on the Federal Reserve's Balance Sheet” in Board of Governors (2020h).

9 The statement is available on the Federal Reserve Board's website at <https://www.federalreserve.gov/monetarypolicy/review-of-monetary-policy-strategy-tools-and-communications-statement-on-longer-run-goals-monetary-policy-strategy.htm>.

10 See Powell (2020) and Clarida (2020a, 2020b) for a more detailed discussion of the new framework.

STABILISING SHORT-TERM FUNDING MARKETS

Liquidity and funding operations

The sharp increase in the demand for cash and other liquid assets in mid-March 2020 caused strains in many other financial markets, disrupting the flow of credit to businesses needed to fund critical operations. To alleviate these strains, the Federal Reserve deployed its most traditional liquidity tool and encouraged depository institutions to turn to the discount window to help meet demands for credit from households and businesses. In support of this goal, the Board announced that it would lower the primary credit rate by 150 basis points to 0.25%, effective 16 March 2020. Narrowing the spread of the primary credit rate relative to the general level of overnight interest rates was intended to help encourage more active use of the window by depository institutions to meet unexpected funding needs. To further enhance the role of the discount window as a tool for banks in addressing potential funding pressures, the Board also announced that depository institutions could borrow from the discount window for periods as long as 90 days. In addition, the Federal Reserve reduced reserve requirement ratios to 0%, effective on 26 March, and also encouraged depository institutions to utilise intraday credit extended by Reserve Banks, on both a collateralised and uncollateralised basis, to support the provision of liquidity to households and businesses and the general smooth functioning of payment systems.¹¹

The liquidity squeeze – with short-term funding drying up even for companies in good financial standing – was particularly acute in the nonbank sector and threatened to amplify the initial economic shock. Businesses and state and local governments with strong finances rely on short-term debt, or ‘commercial paper’ (CP), to raise cash to pay for expenses such as health care, employee salaries, and suppliers’ invoices. These businesses and governments are generally able to roll over their CP every few weeks. As market strains rose and CP spreads spiked, many investors were unwilling to advance funds for longer than a few days, so businesses were forced to issue CP on a near-daily basis, with no guarantee that investors would accept it.

At the same time – and contributing to the stress – investors started to pull away from prime and tax-exempt money market mutual funds (MMFs). These funds typically hold CP and other short-term debt instruments. However, the scale of investor redemptions threatened to exhaust these funds’ holdings of their most liquid assets. Concerns that the funds would restrict or suspend daily redemptions grew, prompting even heavier outflows (Li et al. 2020). The consequences of a failure in the CP market or of restricted

11 For more details, see Board of Governors (2020a)

redemptions from money funds would have been dire: Households and businesses would have missed payments to counterparties, forcing technical defaults by creditworthy entities, with potential consequences for the broader economy.¹²

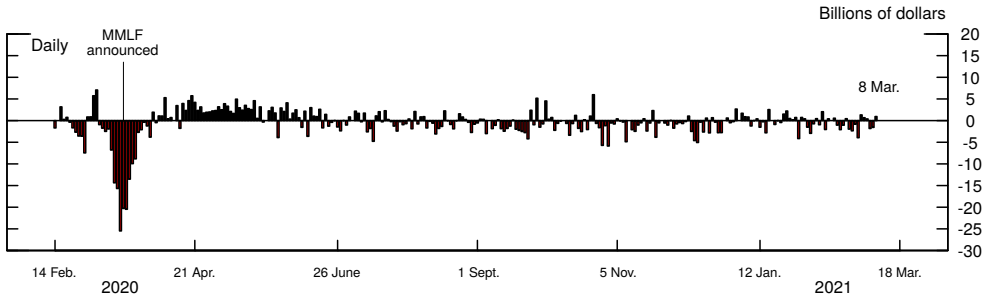
In response, the Federal Reserve, with the approval of the Department of the Treasury, announced the Commercial Paper Funding Facility (CPFF) on 17 March and the Money Market Mutual Fund Liquidity Facility (MMLF) on 18 March, benefiting from the blueprints used for similar programmes established during the global financial crisis. The CPFF became operational on 14 April and the MMLF on 23 March. These emergency lending facilities were established under section 13(3) of the Federal Reserve Act. Each facility had \$10 billion of equity provided by the Treasury Department to protect the Federal Reserve from potential losses.

A companion facility that was also deployed during the global financial crisis, the Primary Dealer Credit Facility (PDCF), was announced on 17 March to provide fully secured loans against good collateral to the primary dealers that are critical intermediaries in short-term funding markets; operations started on 20 March. In March, constraints on dealer intermediation capacity contributed to deteriorating liquidity in even usually liquid markets. The PDCF provided liquidity support to primary dealers in financing a wide range of securities, thereby contributing to smooth market functioning and supporting the financial needs of businesses, households, and communities.

Following the announcement of these facilities, MMFs' outflows stabilised quickly, and CP spreads declined significantly (Figures 3 and 4). The balance outstanding in these facilities grew rapidly during the weeks following their establishment and subsequently declined as market strains eased (Figure 5). In particular, the fees and pricing were set to ensure these facilities worked as a backstop, prompting facilities to automatically wind down as market conditions improved. Although balances in the PDCF, CPFF, and MMLF fell from their peaks fairly quickly, the facilities continued to serve as important backstops against further market stress and supported the flow of credit as the pandemic persisted (Table 2). Each of these facilities was allowed to expire in March 2021.

12 As discussed in Brainard (2021), the run on MMFs and the need for a policy intervention, for the second time in 12 years, highlights the structural vulnerabilities and the importance of reforms to reduce the run risk of prime MMFs. The President's Working Group on Financial Markets has outlined several potential reforms to address this risk (US Treasury 2020). In addition, the runs on offshore MMFs that hold dollar-denominated assets like CP underscore the importance of working with international counterparts, including work being undertaken by the Financial Stability Board, to increase the resilience of short-term funding markets globally.

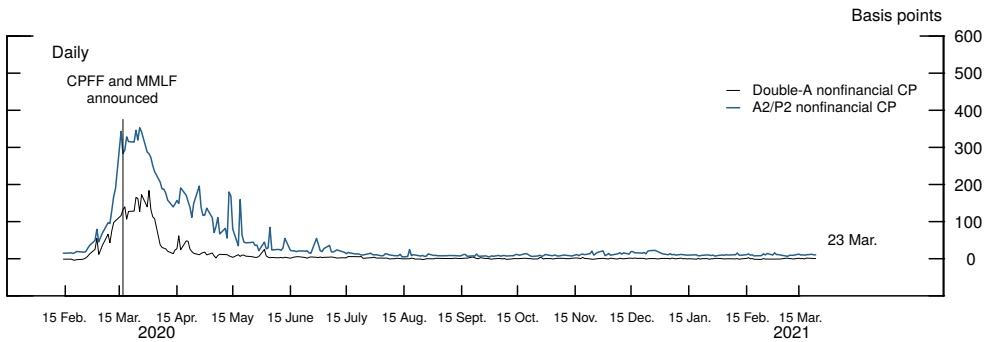
FIGURE 3 PRIME MONEY MARKET MUTUAL FUND NET FLOWS



Note: MMLF is Money Market Mutual Fund Liquidity Facility. On 29 September 2020, Vanguard converted its \$125.3 billion prime money market mutual fund (MMF) into a government MMF. This observation has been omitted from the chart.

Source: iMoneyNet, Money Fund Analyzer-Gold.

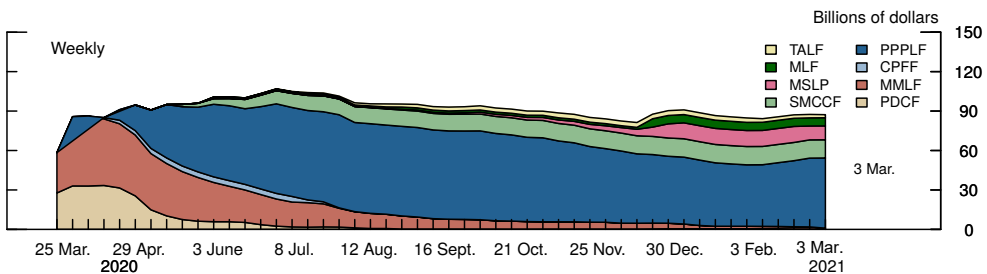
FIGURE 4 ONE-MONTH FUNDING MARKET SPREADS FOR INVESTMENT-GRADE NONFINANCIAL CORPORATIONS



Note: All spreads are to overnight index swap rate of the same tenor. CP is commercial paper; CPFF is Commercial Paper Funding Facility; MMLF is Money Market Mutual Fund Liquidity Facility. Neither DTCC Solutions LLC nor any of its affiliates shall be responsible for any errors or omissions in any DTCC data included in this publication, regardless of the cause and, in no event, shall DTCC or any of its affiliates be liable for any direct, indirect, special or consequential damages, costs, expenses, legal fees, or losses (including lost income or lost profit, trading losses and opportunity costs) in connection with this publication.

Source: Federal Reserve Board; DTCC Solutions LLC, an affiliate of the Depository Trust & Clearing Corporation.

FIGURE 5 EMERGENCY LENDING FACILITIES



Note: The values shown are outstanding amounts. TALF is Term Asset-Backed Securities Loan Facility; MLF is Municipal Liquidity Facility; MSLP is Main Street Lending Program; SMCCF is Secondary Market Corporate Credit Facility; PDCF is Primary Dealer Credit Facility; MMLF is Money Market Mutual Fund Liquidity Facility; CPFF is Commercial Paper Funding Facility; PPPLF is Paycheck Protection Program Liquidity Facility.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances".

TABLE 2 FEDERAL RESERVE EMERGENCY LENDING FACILITIES

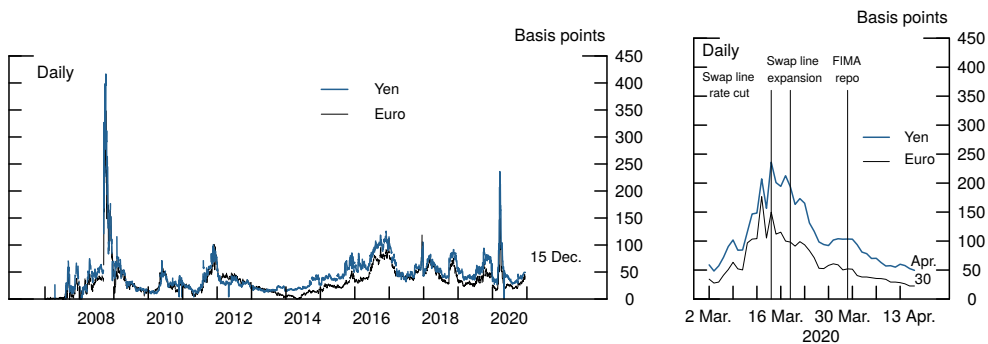
Facility	Announcement date	Launch date	Current end date	Peak outstanding (US\$ bn)	26 Feb. 2021 outstanding (US\$ bn)	Treasury capital provided as equity	Used in GFC?
Commercial Paper Funding Facility	17 March 2020	14 April 2020	31 March 2021	4.2	.0	\$10 billion, ESF funds	Y
Primary Dealer Credit Facility	17 March 2020	20 March 2020	31 March 2021	37.3	.3	N/A	Y
Money Market Mutual Fund Liquidity Facility	18 March 2020	23 March 2020	31 March 2021	54.1	1.2	\$10 billion, ESF funds	Y
Primary Market Corporate Credit Facility	23 March 2020	29 June 2020	31 December 2020	.0	.0	\$50 billion, CARES funds	
Secondary Market Corporate Credit Facility	23 March 2020	12 May 2020	31 December 2020	14.1	14.0	\$25 billion, CARES funds	
Term Asset-Backed Securities Loan Facility	23 March 2020	17 June 2020	31 December 2020	4.1	2.6	\$10 billion, ESF and CARES funds	Y
Main Street Lending Program	23 March 2020	6 July 2020	8 January 2021	16.6	16.5	\$75 billion, CARES funds	
Municipal Liquidity Facility	9 April 2020	26 May 2020	31 December 2020	6.4	6.2	\$35 billion, CARES funds	
Paycheck Protection Program Liquidity Facility	9 April 2020	16 April 2020	30 June 2021	70.9	53.1	N/A	

Note: ESF funds are traditional funds that were already in the Exchange Stabilization Fund (ESF) at the onset of the pandemic, and CARES funds are funds appropriated to the ESF under section 4027 of the Coronavirus Aid, Relief, and Economic Security (CARES) Act. On 23 March 2020, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the programme came on 9 April 2020. GFC is Global Financial Crisis. N/A is not applicable.
Source: Federal Reserve Board.

Easing strains in global dollar funding markets

The US dollar is the leading currency for trade and is used extensively as a funding and investment currency worldwide. In general, foreign financial institutions lack ready access to US retail deposits or other stable sources of dollar funding, and thus rely more heavily on wholesale funding markets than do US institutions. As a result, when dollar funding markets seize up, foreign financial institutions may be disproportionately affected. They not only may cut back on lending to foreign borrowers, thereby exacerbating disruptions in global markets, but also may reduce lending to US residents and liquidate holdings of US assets in order to obtain dollars, harming US households and businesses. Indeed, in mid-March, offshore dollar funding markets came under stress, as manifested by sharp increases in foreign exchange swap basis spreads, which widened to levels last seen in the global financial crisis (Figure 6).

FIGURE 6 THREE-MONTH FX SWAP BASIS SPREADS



Note: FX is foreign exchange; FIMA is Foreign and International Monetary Authorities; repo is repurchase agreement.

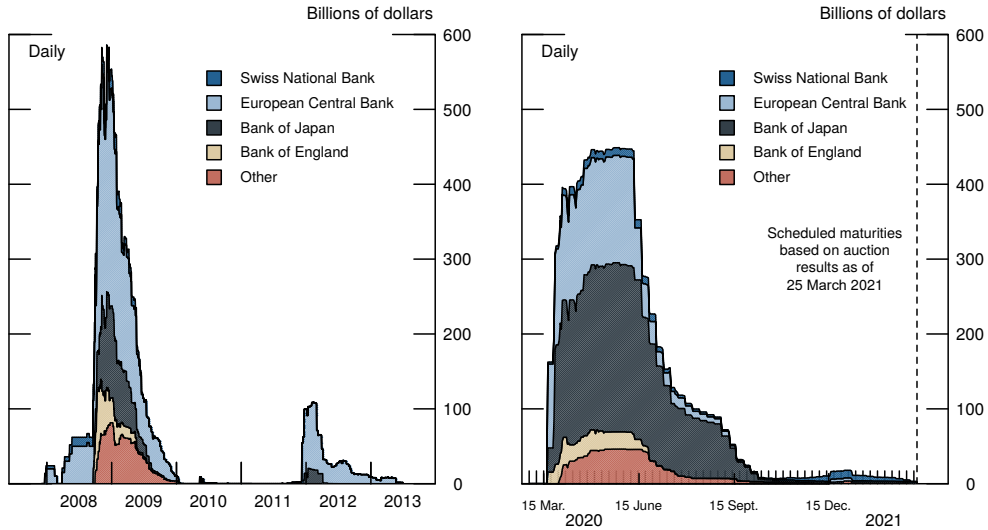
Source: Federal Reserve Bank of New York; calculations based on data from Bloomberg Finance L.P.

In response, the Federal Reserve announced the expansion and enhancement of dollar liquidity swap lines with a number of central banks during the week of 15 March 2020. Longer-term swap operations were added for the four central banks that traditionally hold auctions, and temporary swap lines were reopened with the nine central banks that had temporary agreements during the global financial crisis. The expanded swap lines were met with strong demand (Figure 7). Swap basis spreads declined toward their pre-COVID levels following the announcement and expansion of the swap lines.

In addition to the swap line enhancements, on 31 March the Federal Reserve announced a new programme to support dollar funding markets, the temporary Foreign and International Monetary Authorities (FIMA) Repo Facility. This facility is designed to provide a reliable source of dollar liquidity to a broad range of countries, many of which do not have swap line arrangements with the Federal Reserve. Under this facility, FIMA account holders (which include central banks and other monetary authorities) can enter into overnight repos with the Federal Reserve, temporarily exchanging US Treasury securities they hold at the Federal Reserve for US dollars, which can then be provided

to institutions in their respective jurisdictions. The FIMA Repo Facility allows central banks to obtain dollars for liquidity purposes without selling their Treasury securities outright, which should help relieve pressure in Treasury markets at times of stress. Usage of this facility was minimal in the year following the onset of the pandemic.

FIGURE 7 CENTRAL BANKS DOLLAR SWAPS, OUTSTANDING BY COUNTERPARTY



Note: 'Other' consists of Banco de Mexico, Bank of Canada, Bank of Korea, Central Bank of Brazil, Danmarks Nationalbank, Norges Bank, Reserve Bank of Australia, and Reserve Bank of New Zealand. Auctions by 'other' were held between 2008 and 2009.

Source: Bank of England; European Central Bank; Bank of Japan; Swiss National Bank; and Federal Reserve Board, Statistical Release H.4.1, 'Factors Affecting Reserve Balances'.

Note: Data reflect settlements and the expiry pattern of outstanding swaps. 'Other' consists of Banco de Mexico, Bank of Korea, Danmarks Nationalbank, Monetary Authority of Singapore, Norges Bank, and Reserve Bank of Australia.

Source: Bank of England; European Central Bank; Bank of Japan; Swiss National Bank; and Federal Reserve Board, Statistical Release H.4.1, 'Factors Affecting Reserve Balances'.

SUPPORTING THE FLOW OF CREDIT TO HOUSEHOLDS, COMPANIES, AND STATES

As it became clear that the pandemic would significantly disrupt the global economy, the cost of borrowing rose sharply in the corporate bond market, municipal debt market, and asset-backed securities market. Spreads in these markets widened notably in March 2020, and issuance of new debt in these markets slowed sharply and was restricted to the highest-quality issuers or even ceased altogether. In addition, small and medium-sized businesses that traditionally rely on bank lending faced substantial financial pressures as COVID-19 and the mitigation efforts put in place to contain it forced them to close or substantially cut back operations.

In light of these circumstances, the Federal Reserve Board, with the approval of the Secretary of the Treasury, took a series of steps to support the flow of credit to households, businesses, and communities using authorities under section 13(3) of the

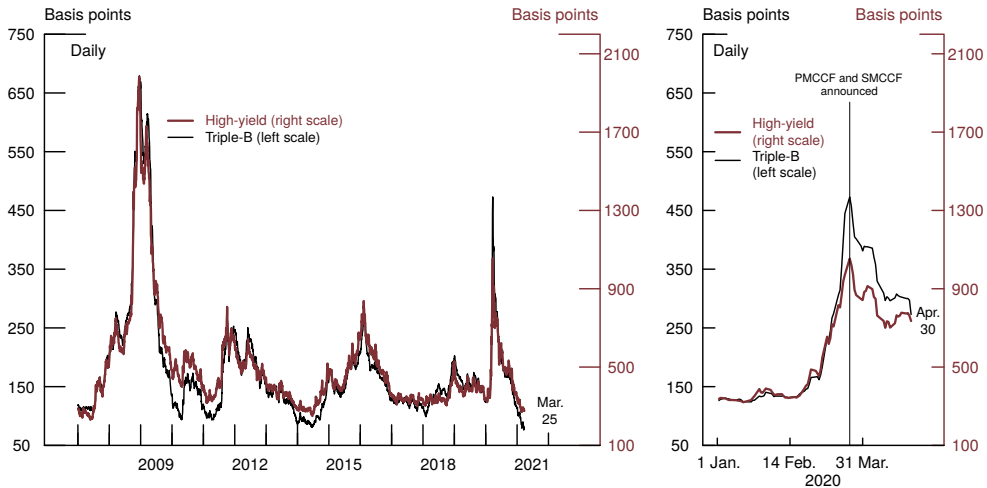
Federal Reserve Act. Ultimately, a set of six section 13(3) facilities were announced to support the flow of credit to large employers, small and medium-sized businesses, households, and state and local governments. The Treasury provided nearly \$200 billion of credit protection to the Federal Reserve using funds appropriated by the Congress for this purpose under the CARES Act.

The Term Asset-Backed Securities Loan Facility was announced on 23 March (with operations starting on 17 June) to facilitate the issuance of auto loans, equipment leases, credit card loans, and other loans that are bundled into asset-backed securities that are sold to investors. By facilitating issuance and instilling confidence that these markets will function effectively, the TALF contributed to the flow of credit to consumers and businesses. A similar TALF programme was also established during the global financial crisis (with operation in 2009–10) and was effective then in supporting the flow of credit to creditworthy consumers and businesses.

The Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF) were also announced on 23 March; SMCCF operations began on 12 May, and the PMCCF opened on 29 June.¹³ These facilities were designed to work together to support the flow of credit to large investment-grade US corporations so that they could maintain business operations and capacity during the period of dislocation related to COVID-19. The PMCCF stood ready to purchase new bonds and loans issued by such corporations, while the SMCCF supported trading in bonds that these corporations had previously issued. In addition to purchasing individual bonds, the SMCCF also purchased shares in exchange-traded corporate bond funds (ETFs), which enabled the Federal Reserve to quickly and broadly support the functioning of the corporate bond market. The PMCCF and SMCCF were also open to firms that were investment grade at the onset of the pandemic but were downgraded to the upper end of the speculative-grade range following the pandemic shock. In order to prevent an unusually large gap from opening up between borrowing costs faced by investment-grade and high-yield businesses, which could have sharply raised borrowing costs faced by businesses downgraded during the pandemic, the SMCCF also purchased a limited amount of shares in ETFs that held high-yield bonds. Shortly after the announcement of the PMCCF and the SMCCF, spreads of both investment- and speculative-grade corporate bonds declined notably (Figure 8). In addition, issuance volumes of investment-grade corporate bonds rebounded to robust levels.

13 The SMCCF began purchasing exchange-traded corporate bond funds on 12 May 2020, and corporate bonds on 16 June 2020.

FIGURE 8 CORPORATE BOND SPREADS TO 10-YEAR TREASURY



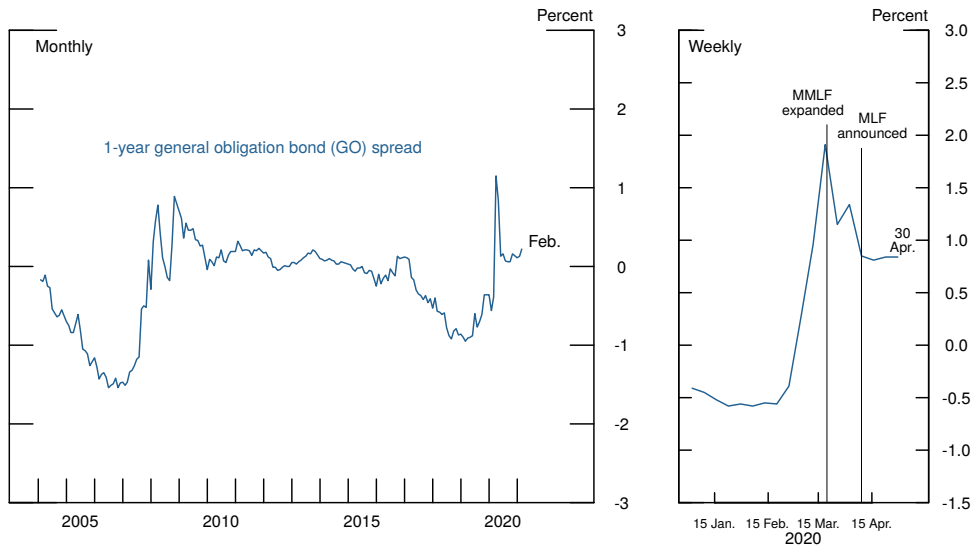
Note: The triple-B reflects the effective yield of the ICE Bank of America Merrill Lynch triple-B US Corporate Index (COA4), and the high-yield reflects the effective yield of the ICE BofAML US High Yield Index (HOAO). Treasury yields from smoothed yield curve estimated from off-the-run securities. Spreads over 10-year Treasury yield. PMCCF is Primary Market Corporate Credit Facility and SMCCF is Secondary Market Corporate Credit.

Source: ICE Data Indices, LLC, used with permission.

The Paycheck Protection Program Liquidity Facility (PPPLF) was announced on 9 April to extend credit to lenders that participated in the Small Business Administration’s Paycheck Protection Program (PPP). The PPPLF began extending advances on 16 April. The PPP provided forgivable loans to small businesses so that they can keep their workers on the payroll. The PPPLF bolstered the effectiveness of the PPP by supplying liquidity to lenders focused on servicing small businesses.¹⁴

The Municipal Liquidity Facility (MLF) was also announced on 9 April and became operational on 26 May to help state and local governments better manage cash flow pressures to continue to serve households and businesses in their communities. The facility stood ready to purchase short-term debt from US states, cities, and other public enterprises such as transportation systems. The Federal Reserve designed the MLF to improve access to credit by creditworthy state and local governments. Conditions in municipal bond markets improved after the announcement that the CPFF and the MMLF would be broadened to accept short-term securities issued by state and local governments, and they improved further after the subsequent announcement of the MLF (Figure 9).

¹⁴ The PPP loans under the PPP are fully guaranteed as to principal and interest by the Small Business Administration, and these guaranteed loans fully collateralise extensions of credit under the PPPLF. As a result, this facility did not include specific credit protection from the US Treasury to the Federal Reserve.

FIGURE 9 MUNICIPAL BOND SPREADS TO 10-YEAR TREASURY

Note: MLF is Municipal Liquidity Facility; MMLF is the Money Market Mutual Fund Liquidity Facility.

Source: Bond Buyer via Bloomberg L.P.; Municipal Market Analytics, Inc.

The Main Street Lending Program was announced on 23 March to support the flow of credit to small and medium-sized employers, with operations commencing on 6 July.¹⁵ The programme purchased 95% participations in loans originated by depository institutions to borrowers with 15,000 or fewer employees or \$5 billion or less in annual revenue. The Federal Reserve designed the Main Street programme to complement the PMCCF and SMCCF by supporting lending to businesses that are too small to benefit directly from those facilities. Purchases of loan participations through Main Street both directly enhanced access to credit for small and medium-sized businesses and indirectly supported lending outside the programme by expanding the lending capacity of depository institutions. Despite the many challenges around setting up the program, as highlighted by English and Liang (2020), Main Street did provide a substantial amount of credit to smaller businesses. Even though the program used only a small fraction – \$17.5 billion – of its capacity to facilitate \$600 billion in loans, as shown in Bräuning and Paligorova (2021), Main Street’s 1,830 loans went to 2,453 borrowers, 99% of which were smaller businesses. These loans were generally concentrated among businesses in the industries and locations particularly hard hit by the COVID-19 pandemic.

The PMCCF, SMCCF, and MLF served their intended backstop role. The ‘announcement effect’ led to rapid improvements in financing conditions in corporate and municipal bond markets well ahead of the facilities’ actual opening, resulting not just in tighter

¹⁵ On 23 March, the Federal Reserve said it expected to announce soon the establishment of a Main Street Lending Program. The actual announcement of the programme came on 9 April 2020.

spreads, but also an increased ability for a variety of issuers – including those not explicitly covered by these facilities – to access markets on reasonable terms. These facilities, with the exception of the PPPLF, were closed to new activity as of the end of December 2020. The PPPLF was extended until 30 June 2021. As of 10 March 2021, the PPPLF supported PPP loans to more than 7.5 million small businesses, peaking at more than \$70 billion in August 2020 (Table 2).

SUPERVISORY AND REGULATORY INITIATIVES

A well-capitalised, stable banking system that is lending to creditworthy households and businesses is critical to fully supporting the flow of credit to the economy.¹⁶ In the years following the GFC, the Federal Reserve focused on building the resilience of banks so that they could be a source of liquidity and credit during a future downturn. The largest US banks came into the pandemic with roughly twice the capital, more than three times the high-quality liquid assets, and substantially less short-term wholesale funding than on the eve of the GFC. Indeed, as the crisis intensified in early March 2020, banks met the considerable demands for cash from businesses that drew on their pre-existing credit lines. Banks also funded the bulk of the more than \$500 billion in PPP loans. As a result, commercial and industrial loans increased \$715 billion between 26 February and their peak on 13 May.¹⁷ Banks also agreed to forbear interest and principal payments on the loans of millions of struggling households. In addition, through September 2020, banks absorbed about \$2.5 trillion of deposits from investors who sought the safe haven of the US dollar and insured bank accounts.

As a bank supervisor, the Federal Reserve recognised that its supervisory actions could strain the balance sheet capacity of banks and so took a number of steps to allow them to continue to support their customers during this unprecedented time. Along with the other federal banking agencies, the Federal Reserve issued a statement encouraging banks to work constructively with borrowers who were affected by COVID-19, recognising that offering a customer a responsible loan modification could be a safe and sound banking practise and could help facilitate the economic recovery.¹⁸

With regard to actions taken that are relevant for larger institutions, the Federal Reserve adapted its stress-testing framework to better identify the potential effects of the pandemic on the capital positions of banks. In June 2020, it released the annual stress-test results and an additional sensitivity analysis that explored vulnerabilities of banks to the downside risks to the economy arising from the pandemic (Board of Governors

16 The language and content of this section are based on Clarida (2020c) and Quarles (2020).

17 See Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States," available on the Federal Reserve Board's website at <https://www.federalreserve.gov/releases/h8>.

18 For loan modification details, see Federal Financial Institutions Examination Council (2020).

2020d). At the same time, to ensure resilience of the largest banks, it required them to resubmit their capital plans, imposed limitations on capital distributions, and provided new scenarios used for a second round of stress tests conducted in December 2020.¹⁹

Among other actions to support financial intermediaries during the pandemic, in April 2020 the Board issued an interim final rule that excluded, on a temporary basis, US Treasury securities and deposits at Federal Reserve Banks from large bank holding companies' supplementary leverage ratios.²⁰ The rule helped ease strains in the US Treasury market and facilitated the significant inflow of customer deposits to banks that has occurred since the onset of the crisis. On 27 March 2020, the Fed – together with other regulatory agencies – allowed banking organisations to mitigate the impact of the current expected credit losses accounting standard on regulatory capital, in order to allow these organisations to better focus on supporting lending to creditworthy households and businesses.²¹

Turning to some issues of particular importance to small banks, the Fed provided temporary regulatory relief on the community bank leverage ratio, on regulatory reporting deadlines, and on appraisal requirements. It also streamlined bank examinations for small banks. These actions provided banks with additional time and resources to adjust their operations to prioritise the financial needs of their customers and communities, and to play the vital role of lending to small businesses through the PPP.

CONCLUSION

In the United States, both the fiscal and monetary policy responses to the COVID crisis were unprecedented in their scale, scope, and speed. In this chapter, we have argued that the Federal Reserve acted decisively and with dispatch to deploy all the tools in its conventional kit and to design, develop, and launch within weeks a series of innovative facilities to support the flow of credit to households and business. These measures, taken together and in tandem with a historic fiscal policy response, provided crucial support to the economy in 2020 and are continuing to contribute to what is expected to be a robust economic recovery in 2021.

19 For second-round stress-test information, see Board of Governors (2020c, 2020e).

20 For more details regarding the effect on the supplementary leverage ratio, see Board of Governors (2020b). On 15 May 2020, federal bank regulatory agencies announced temporary changes to the supplementary leverage ratio, which extended the 1 April changes to certain depository institutions (Board of Governors et al. 2020b).

21 For more details about the interagency statement on current expected credit losses, see Board of Governors et al. (2020a).

REFERENCES

Barr, M, H Jackson and M Tahyar (2020), “The financial response to the COVID-19 pandemic”, working paper, August.

Board of Governors of the Federal Reserve System (2020a), “Federal Reserve actions to support the flow of credit to households and businesses”, press release, 15 March (www.federalreserve.gov/newsevents/pressreleases/monetary20200315b.htm).

Board of Governors of the Federal Reserve System (2020b), “Federal Reserve Board announces temporary change to its supplementary leverage ratio rule to ease strains in the Treasury market resulting from the coronavirus and increase banking organizations’ ability to provide credit to households and businesses”, press release, 1 April (www.federalreserve.gov/newsevents/pressreleases/bcreg20200401a.htm).

Board of Governors of the Federal Reserve System (2020c), “Federal Reserve Board releases hypothetical scenarios for second round of bank stress tests”, press release, 17 September (www.federalreserve.gov/newsevents/pressreleases/bcreg20200917a.htm).

Board of Governors of the Federal Reserve System (2020d), “Federal Reserve Board releases results of stress tests for 2020 and additional sensitivity analyses conducted in light of the coronavirus event”, press release, 25 June (www.federalreserve.gov/newsevents/pressreleases/bcreg20200625c.htm).

Board of Governors of the Federal Reserve System (2020e), “Federal Reserve Board releases second round of bank stress test results”, press release, 18 December (www.federalreserve.gov/newsevents/pressreleases/bcreg20201218b.htm).

Board of Governors of the Federal Reserve System (2020f), *Financial stability report*, May (www.federalreserve.gov/publications/files/financial-stability-report-20200515.pdf).

Board of Governors of the Federal Reserve System (2020g), *Financial stability report*, November (www.federalreserve.gov/publications/files/financial-stability-report-20201109.pdf).

Board of Governors of the Federal Reserve System (2020h), Monetary policy report, June (www.federalreserve.gov/monetarypolicy/files/20200612_mprfullreport.pdf).

Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (2020a), “Agencies announce two actions to support lending to households and businesses”, joint press release, 27 March (www.federalreserve.gov/newsevents/pressreleases/bcreg20200327a.htm).

Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency (2020b), “Regulators temporarily change the supplementary leverage ratio to increase banking organizations’ ability to support credit to households and businesses in light of the coronavirus response”, joint press release, 15 May (www.federalreserve.gov/newsevents/pressreleases/bcreg20200515a.htm).

Brainard, L (2021), “Some preliminary financial stability lessons from the COVID-19 shock”, speech delivered at the 2021 Annual Washington Conference, Institute of International Bankers (via webcast), 1 March (www.federalreserve.gov/newsevents/speech/brainard20210301a.htm).

Bräuning, F and T Paligorova (2021), “Uptake of the Main Street Lending Program”, Current Policy Perspectives, 2021 Series, Federal Reserve Bank of Boston, March (www.bostonfed.org/publications/current-policy-perspectives/2021/uptake-of-the-main-street-lending-program.aspx).

Campbell, S, D Covitz, W Nelson and K Pence (2011), “Securitization markets and central banking: An evaluation of the Term Asset-Backed Securities Loan Facility”, *Journal of Monetary Economics* 58 (July): 518-531.

Clarida, R (2020a), “The Federal Reserve’s new framework: Context and consequences”, speech delivered at “The economy and monetary policy”, an event hosted by the Hutchins Center on Fiscal and Monetary Policy at the Brookings Institution, Washington (via webcast), 16 November (www.federalreserve.gov/newsevents/speech/clarida20201116a.htm).

Clarida, R (2020b), “The Federal Reserve’s new monetary policy framework: A robust evolution”, speech delivered at the Peterson Institute for International Economics, Washington (via webcast), 31 August (www.federalreserve.gov/newsevents/speech/clarida20200831a.htm).

Clarida, R (2020c), “US economic outlook, monetary policy, and initiatives to sustain the flow of credit to households and firms”, speech delivered at the Unconventional Convention of the American Bankers Association, Washington (via webcast), 19 October (www.federalreserve.gov/newsevents/speech/clarida20201019a.htm).

Emmons, W and C Neely (2020), “Responses of international central banks to the Covid-19 crisis”, working paper, October.

English, W and N Liang (2020), “Designing the Main Street Lending Program: Challenges and options”, Hutchins Center Working Papers Series 64, Brookings Institution, June (www.brookings.edu/research/designing-the-main-street-lending-program-challenges-and-options).

Federal Financial Institutions Examination Council (2020), “Federal Financial Institutions Examination Council issues statement on additional loan accommodations related to COVID-19”, press release, 3 August (www.ffiec.gov/press/pro80320.htm).

Federal Reserve Bank of New York (2020a), “Statement regarding repurchase operations”, 9 March (www.newyorkfed.org/markets/opolicy/operating_policy_200309).

Federal Reserve Bank of New York (2020b), “Statement regarding repurchase operations”, 9 March (www.newyorkfed.org/markets/opolicy/operating_policy_200309a).

Federal Reserve Bank of New York (2020c), “Statement regarding repurchase operations”, 16 March (www.newyorkfed.org/markets/opolicy/operating_policy_200316).

Federal Reserve Bank of New York (2020d), “Statement regarding repurchase operations”, 13 April (www.newyorkfed.org/markets/opolicy/operating_policy_200413).

Federal Reserve Bank of New York (2020e), “Statement regarding repurchase operations”, 13 May (www.newyorkfed.org/markets/opolicy/operating_policy_200513).

Federal Reserve Bank of New York (2020f), “Statement regarding Treasury reserve management purchases and repurchase operations”, 12 March (www.newyorkfed.org/markets/opolicy/operating_policy_200312a).

Li, L, Y Li, M Macchiavelli and X Zhou (2020), “Liquidity restrictions, runs, and central bank interventions: Evidence from money market funds”, working paper, December.

Mizrach, B and C Neely (2020), “Federal Reserve System international facilities”, Economic Synopses No. 29, Federal Reserve Bank of St. Louis, May (<https://research.stlouisfed.org/publications/economic-synopses/2020/05/29/federal-reserve-system-international-facilities>).

Powell, J (2020), “New economic challenges and the Fed’s monetary policy review”, speech delivered at “Navigating the decade ahead: Implications for monetary policy”, a symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, Wyo. (via webcast), 27 August (www.federalreserve.gov/newsevents/speech/powell20200827a.htm).

Quarles, R (2020), “Remarks at the Hoover Institution”, speech delivered at the Hoover Institution, Stanford, CA (via webcast), 14 October (www.federalreserve.gov/newsevents/speech/quarles20201014a.htm).

Sims, E and J Wu (2020), “Wall Street vs. Main Street QE”, working paper, May.

US Department of the Treasury (2020), *Report of the President’s Working Group on Financial Markets: Overview of recent events and potential reform options for money market funds*, December (<https://home.treasury.gov/system/files/136/PWG-MMF-report-final-Dec-2020.pdf>).

ABOUT THE AUTHORS

Richard H. Clarida began a four-year term as Vice Chair of the Board of Governors of the Federal Reserve System on September 17, 2018, and took office as Board member to fill an unexpired term ending January 31, 2022.

Prior to his appointment to the Board, Dr. Clarida served as the C. Lowell Harriss Professor of Economics and International Affairs at Columbia University, where he taught from 1988 to 2018. From 1997 until 2001, Clarida served as chairman of the Department of Economics at Columbia University.

In addition to his academic experience, Dr. Clarida served as the assistant secretary of the U.S. Treasury for Economic Policy from February 2002 until May 2003. In that position, he served as chief economic adviser to Treasury secretaries Paul H. O'Neill and John W. Snow. He was awarded the Treasury Medal in recognition of his service. Dr. Clarida also served on the Council of Economic Advisers under President Reagan.

From 2006 to 2018, Dr. Clarida served as global strategic advisor with PIMCO and was promoted to managing director in 2015.

Dr. Clarida is a member of the Council on Foreign Relations and, from 1983 to 2018, the National Bureau of Economic Research (NBER). From 2004 to 2018, he served as co-editor of the *NBER International Macroeconomics Annual*.

He received a BS in Economics from the University of Illinois with Bronze Tablet honors and an MA and PhD in Economics from Harvard University.

Burcu Duygan-Bump serves as special adviser to Vice Chair Clarida and is also associate director in the Research and Statistics Division at the Board of Governors of the Federal Reserve System. Her responsibilities include contributing to deliberations on monetary policy, the staff's economic projections, and assessment of financial stability risks; formulating some of the Fed's crisis response policies; ongoing monitoring of financial markets; participating in strategic planning and oversight activities; and conducting economic research.

She has written on the history of the Fed's monetary policy toolkit, liquidity regulations and the central bank's role as a lender of last resort, demand for safe assets and monetary policy, and the linkages between the financial sector and the real economy. Her research has been published in many scholarly journals, including the *Journal of Finance*, *Journal of Monetary Economics*, and *International Journal of Central Banking*.

Before joining the Board in 2012, Dr. Duygan-Bump worked in the Supervision, Regulation, and Credit Department at the Federal Reserve Bank of Boston. Dr. Duygan-Bump was born in Ankara, Turkey. She holds a BA in Economics from Bilkent University and an MA and PhD in Economics from the John Hopkins University.

Chiara Scotti joined the Board of Governors of the Federal Reserve System in 2005 and is currently serving as special adviser to Vice Chair Clarida. She is also deputy associate director in the Financial Stability Division at the Board. Her expertise spans deliberation and evaluation of conventional and unconventional monetary policy; assessment of financial stability risks, with particular emphasis on asset managers and the interconnectedness of the financial system; monitoring of domestic and international financial markets; and LIBOR transition.

Her research explores a variety of topics in applied macroeconomics and finance, including real-time data and measurement of business conditions, macroeconomic surprises, and uncertainty as well as unconventional monetary policy, financial stability, and asset managers. Her real-time index of US business conditions—the Aruoba-Diebold-Scotti (ADS) index—and surprise and uncertainty indexes are widely used in academic papers and industry analyses. She has published in a variety of refereed journals such as the *Journal of Monetary Economics*, *Journal of Business and Economic Statistics*, and *Journal of Money, Credit and Banking*. She spent the 2017 fall semester at Bocconi University as visiting professor.

Dr. Scotti holds a BA in Economics (*summa cum laude*) from Bocconi University and an MA and PhD in Economics from the University of Pennsylvania. Before obtaining her PhD, she worked as an analyst for Credit Suisse in London and as a PhD intern for the European Central Bank in Frankfurt.

PART III

THE CENTRAL BANK RESPONSES IN EMERGING ECONOMIES

CHAPTER 10

Brazil: Covid-19 and the road to recovery¹

175

Fernanda Nechio and Bruno Serra Fernandes

Banco Central do Brasil

1. INTRODUCTION

The Covid-19 pandemic has brought severe and widespread economic consequences for the global economy. Several countries adopted voluntary or mandatory measures to restrict population mobility and slow the virus spread. These much-needed efforts have led to sharp and sudden declines in aggregate demand, as well as unprecedented declines in output, particularly during the first half of 2020.

Fiscal and monetary policy responses worldwide were timely, extraordinary in magnitude, and wide in scope. Fiscal authorities designed and implemented programmes aiming to provide lifelines to households and firms, restore workers' income and preserve jobs. Monetary authorities sought to guarantee appropriate market liquidity conditions to support credit markets. Central banks from both developed and emerging economies lowered their policy rates to historically low levels. Some of them also resorted to unconventional monetary policies.

In Brazil, as in other developed and emerging economies, the pandemic drove a large share of the economy to a near complete halt in the second quarter of 2020. In response, large and unprecedented fiscal and monetary policies were quickly put in place. While the responses to the crisis were similar in nature to those implemented in other countries, policy actions taken by monetary and fiscal authorities were tailored to fit Brazil's economic characteristics, its society's needs, and the mandates of responding institutions. The fiscal authority targeted its policies to informal workers, low-income households and small and medium-sized firms implementing transfer and subsidised credit programmes. The Banco Central do Brasil (BCB) relied on conventional monetary policy, as well as on liquidity provision and transitory adjustments to the regulatory framework. In addition, the Brazilian Congress temporarily expanded the BCB's toolbox, allowing it to buy and sell public and private bonds to face the economic effects of the Covid-19 pandemic.

¹ This chapter was written in February 2021.

Although this new tool was not employed, its availability helped ease market concerns. The economy responded well to the policies in place recovering strongly during the second half of 2020.

This chapter focuses on the Brazilian experience and the monetary authorities' responses to the Covid-19 pandemic and their impact in the economy. It also briefly describes the fiscal response to the crisis. As the crisis is still unfolding, the chapter concludes with a discussion of the challenges ahead.

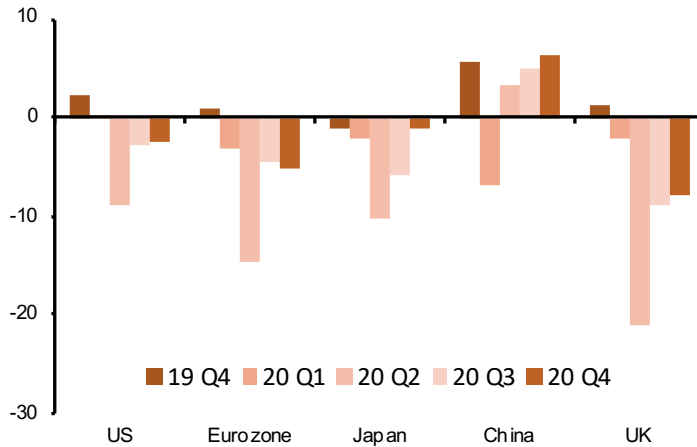
2. INTERNATIONAL BACKGROUND

The arrival of the Covid-19 pandemic brought an unprecedented retraction in the global economy. Advanced economies (AEs) and emerging economies (EMEs) adopted voluntary or mandatory measures to restrict population mobility and slow the virus spread. These much-needed efforts led to sharp declines in output worldwide, particularly in the first half of 2020 (Figures 1 and 2).

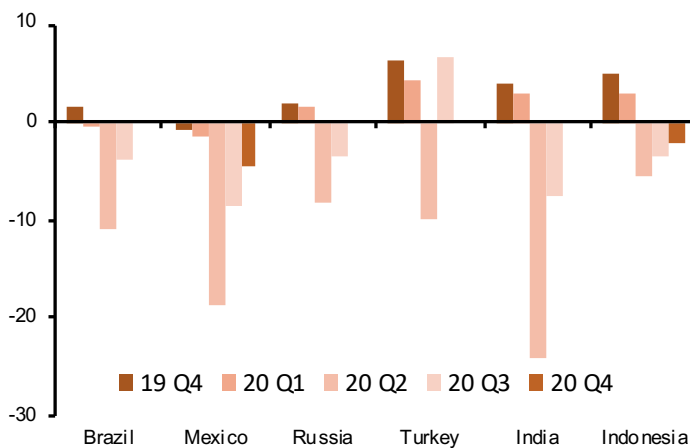
The near halt of some economic activities and the uncertainty regarding the evolution of the pandemic caused disruptions in global trade chains, significant contractions in the consumption of goods and services, and a worldwide decline in consumer and investor confidence. The service sector, which accounts for a large share of countries' GDP, was particularly affected, with significant declines in the transportation, tourism, entertainment, and leisure sectors.

Fiscal and monetary policies implemented to respond to the crisis were timely, bold, and large in scope. These policies aimed at providing lifelines to help households and firms to weather through the lockdowns. Authorities acted quickly to restore workers' incomes, preserve jobs, help most-affected sectors, and guarantee the well-functioning of credit markets and the financial sector.

Central banks from both developed and emerging economies were able to build from the experience acquired during the Global Financial Crisis (GFC), which showed the importance of acting quickly and boldly. Central banks of developed economies resorted to both conventional and unconventional accommodative policies. They quickly lowered policy rates where possible and announced (and implemented) sizable asset purchase programmes to increase the monetary stimulus, expand liquidity or act as a *market maker of last resort*. Differently from the GFC, the health nature of this crisis meant that financial systems were well positioned to face it, and moral hazard was less of a concern. Another remarkable difference relative to 2008 was the existence of a new Basel framework, within which regulators had room to ease capital and liquidity requirements. Those conditions allowed central banks to go far beyond their 2008 response, allowing the banking system to act counter-cyclically to the shock, which was an important part of the response to the crisis.

FIGURE 1 GDP, ADVANCED ECONOMIES (YEAR-ON-YEAR, %)

Source: Bloomberg, 2019Q4-2020Q4.

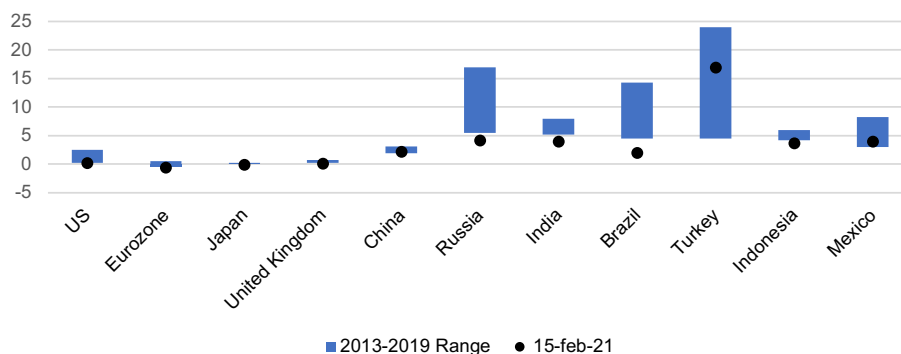
FIGURE 2 GDP, EMERGING ECONOMIES (YEAR-ON-YEAR, %)

Source: Bloomberg, 2019Q4-2020Q4.

Central banks in emerging economies also responded decisively to the economic deterioration caused by the pandemic. Because of the global scope and the nature of this crisis, the response of emerging and advanced economies' central banks was remarkably similar. Most EME central banks cut their policy rates to historically low levels (Figure 3). Some central banks resorted to unconventional measures to preserve local markets' proper functioning and re-establish adequate liquidity conditions, mitigating increases in credit costs. EME central banks also offered liquidity lines in local and foreign currencies, in addition to signing currency swap agreements with other central banks, aiming to maintain the smooth functioning of exchange rate markets. In most

cases, despite not having effectively used these swaps, the agreements were considered an important turning point to restore confidence in financial markets. Finally, central banks and national treasuries in EMEs also resorted to emergency programmes guaranteeing the flow of credit to small and medium-sized businesses.

FIGURE 3 POLICY INTEREST RATE SINCE 2013



Some of the differences in the responses of EMEs and AEs derived from different legal powers and market structures. Some EME central banks have more limited powers to intervene on government bonds and capital markets. In addition, financing in some economies depends more heavily on banking credit. Due to these characteristics, EME central banks relied more heavily on expanding liquidity through conventional tools and funding for bank lending than on asset purchases.

Reflecting the strong response from monetary and fiscal authorities, as well as the partial reversal of some mobility restrictions, the second half of 2020 was marked by a robust, though uneven, recovery of most economies (Figures 1 and 2). The global economy showed a strong rebound in the third quarter, although concentrated in a few sectors such as the industrial and agricultural sectors, led by the consumption of staples and durables. The recovery continued during the last quarter of 2020 but decelerated relative to the third quarter, partially due to new waves of Covid-19 infections and new mobility restrictions.

Overall, economic activity ended 2020 below the levels observed at the beginning of the year. In addition, the economic recovery was also reflected in diverging trends of sectoral prices. The second half of 2020 was marked by strong increases in food prices and downward trends in service prices. Some EMEs, for which food items correspond to a larger share of their main price indices, ended 2020 facing somewhat stronger inflationary pressures (Figures 4 and 5).

FIGURE 4 CPI SERVICES (YEAR-ON-YEAR, %)

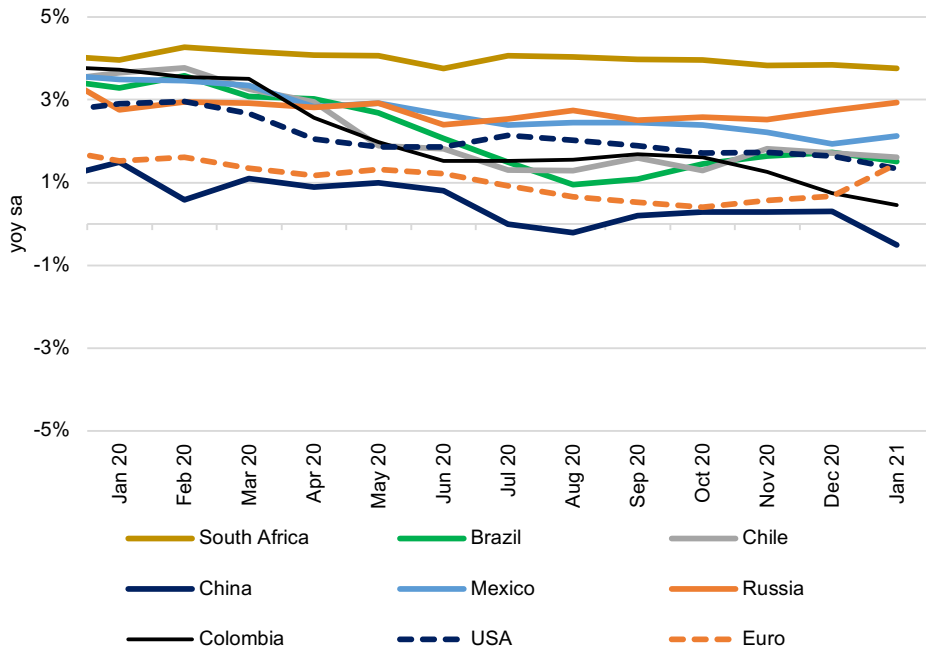
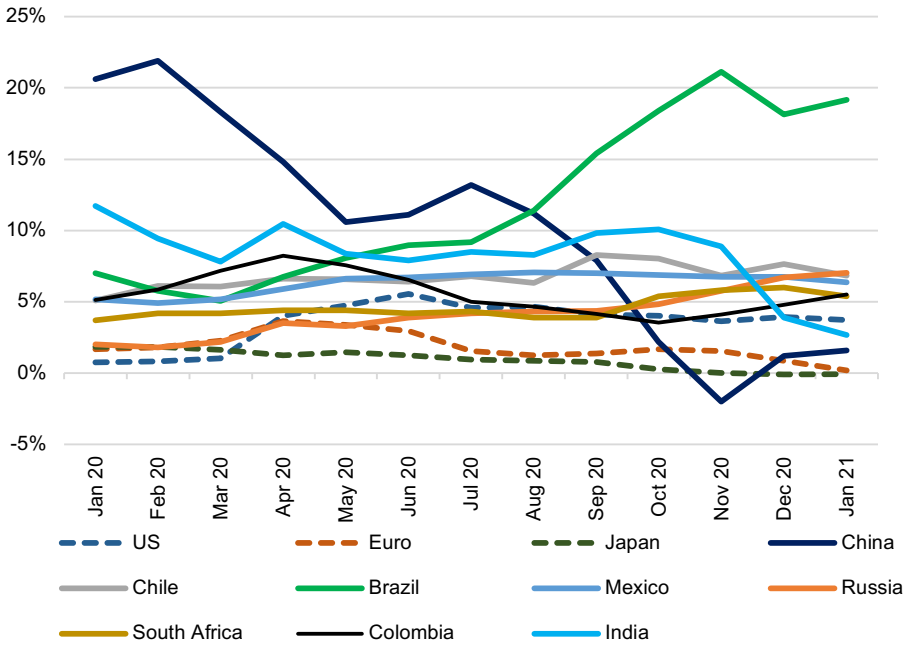


FIGURE 5 CPI FOOD (YEAR-ON-YEAR, %)



A feature of the crisis brought on by the Covid-19 pandemic was that both developed and emerging economies faced a common trend and, nearly simultaneously, implemented policies that shared common ingredients, albeit different in their scope, size, and other details. Brazil was no exception to this, as we turn to next.

3. THE PANDEMIC IN BRAZIL

The Covid-19 pandemic arrived in Brazil and in other emerging economies later than in Europe, with the virus spread only gaining momentum by mid-May (Figures 6 and 7). Its effects on the financial sector and the economy, however, were felt much earlier than that. By early March, capital outflows from EMEs were larger than in any other recent crisis, asset prices fell, and exchange rates depreciated sharply (Figures 8 and 9).

FIGURE 6 COVID-19 CASES IN ADVANCED ECONOMIES

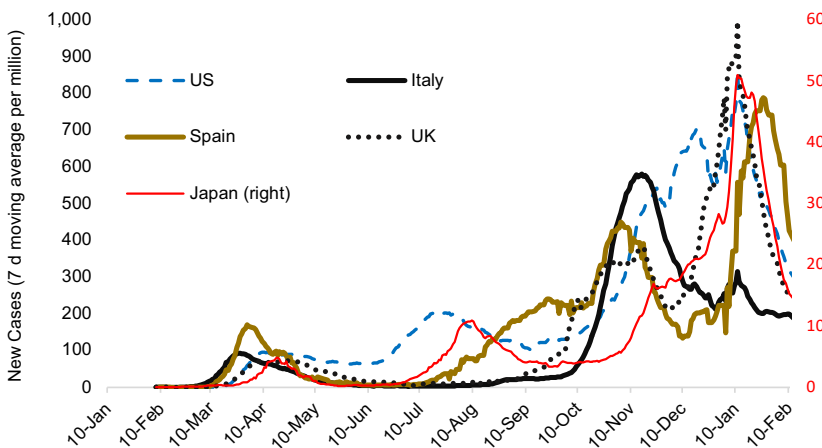


FIGURE 7 COVID-19 CASES IN EMEs

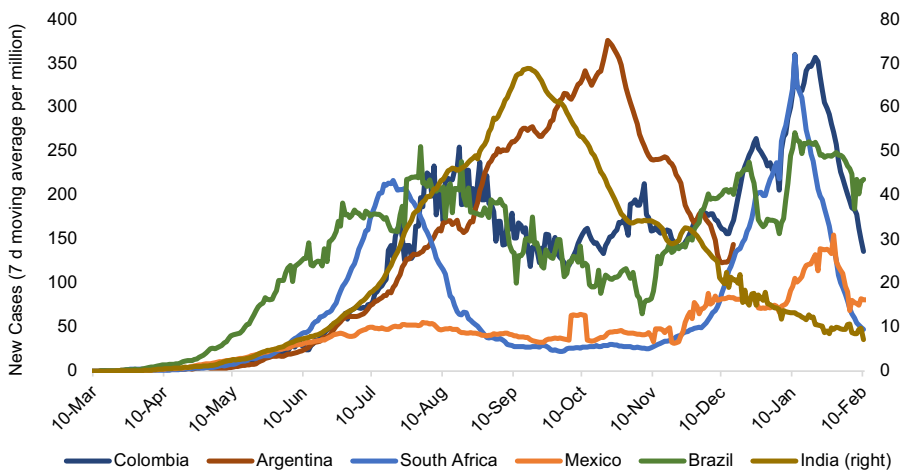
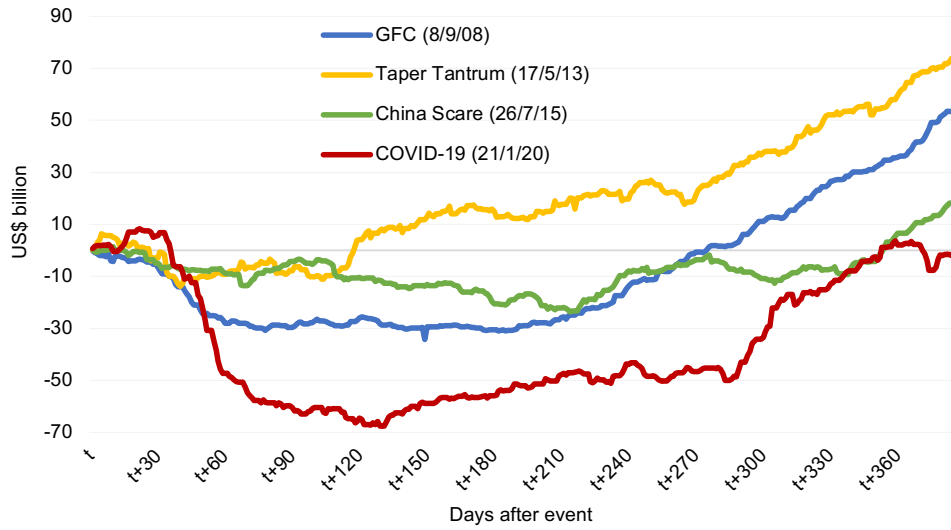
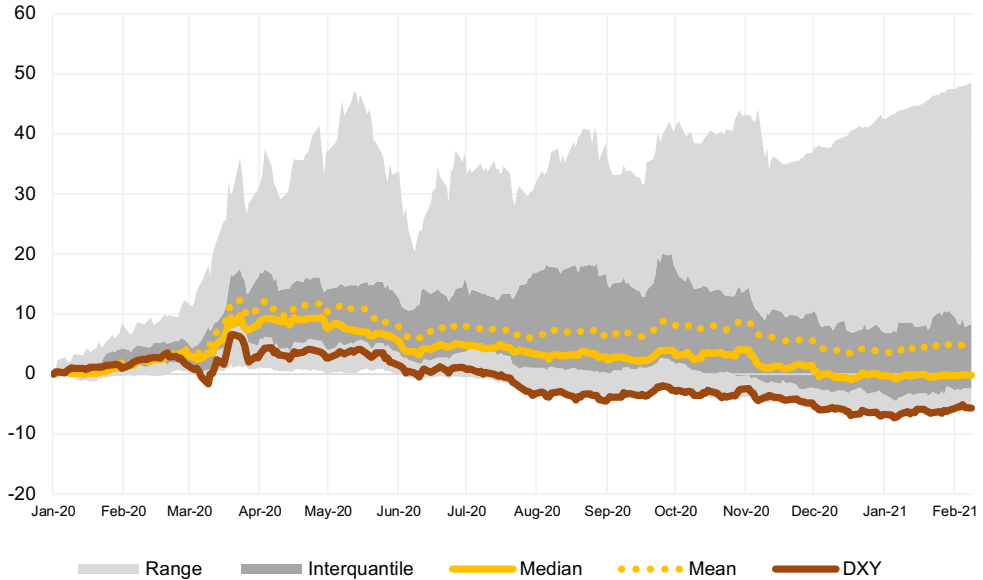


FIGURE 8 ACCUMULATED NON-RESIDENT PORTFOLIO FLOWS TO EMEs SINCE INDICATED DATE*



Note: * Daily net total flows for Mexico, Korea, Taiwan, India, Indonesia, South Africa, Thailand, Philippines, Sri Lanka, and Vietnam.

FIGURE 9 EME CURRENCIES



Policy responses

As in other economies, both fiscal and monetary authorities responded quickly to the Covid-19 challenge. As the crisis unfolded and worldwide risk aversion and uncertainty spiked, Brazil experienced a sudden and disseminated increase in households' and businesses' demand for liquidity. Measures to curb mobility and lockdowns of some areas and particular sectors strongly affected consumer demand and the supply of goods. As in other countries, Brazil's economy experienced one of the largest output declines in history.

In this context, the BCB adopted a series of measures to provide stimulus to the economy, to ensure proper functioning of the financial markets, and to safeguard the stability of the financial system.

To provide support to the economy, during the first half of 2020, the BCB lowered its policy rate from 4.25% to 2%. Furthermore, the BCB used forward guidance to anchor the yield curve from August 2020 to January 2021. In addition, to respond to liquidity and credit needs, the BCB enacted a series of measures. The first set of policies sought to increase liquidity in local currency by easing reserve requirements, opening new liquidity facilities, and creating incentives for this liquidity to be directed to capital markets. It also intervened in currency spot markets to provide liquidity in dollars on onshore and offshore markets and sold dollars through derivatives (Figure 12). The second set of policies aimed at supporting the credit flow to households and firms. Within the Basel framework, the BCB eased regulatory capital requirements to release balance sheet buffers of financial institutions.

Capital markets have only recently become a relevant credit channel in Brazil (Barroso and Nechio 2020), and this was one of the first financial market segments to be affected by the sharp increase in liquidity demand. After growing fast in the last two years, many investment funds had to sell considerable amounts of their assets in a narrow time frame to deal with a record amount of redemptions. This led to a loss of reference parameters for trading in the secondary market. Financial institutions, in turn, were attending to their own clients' demand to raise cash through new loans and were unwilling to enter on the buying side, fearing the same liquidity squeeze that reached the investment fund industry.

The BCB reduced required reserves on term deposits from 31% to 17%, unfreezing BRL 205 billion (3% of GDP), and allowed systemically important institutions to operate with liquidity coverage ratios (LCRs) temporarily below the regulatory level of 100%. In addition, the BCB developed a Special Temporary Liquidity Facility to supply extraordinary liquidity, backed by a basket of loans and securities, focusing on financial institutions (FIs) that did not access liquidity through the reserve requirement easing.²

² Reserve requirements are mostly held by systemically important institutions. The six largest banks account for 92% of total balance-of-term deposits and savings reserve requirements.

Finally, to tackle the liquidity squeeze in capital markets, the BCB designed incentives for FIs to purchase corporate or repurchase their own issuances of long-term Financial Letters. This measure sought to increase the demand for fixed-income assets issued by the private sector, thereby reducing the deleterious effects caused by fire-sales of these assets by investment funds. After the implementation of the liquidity-enhancing measures, the trading value of private securities in the secondary market increased and the spreads stabilised.

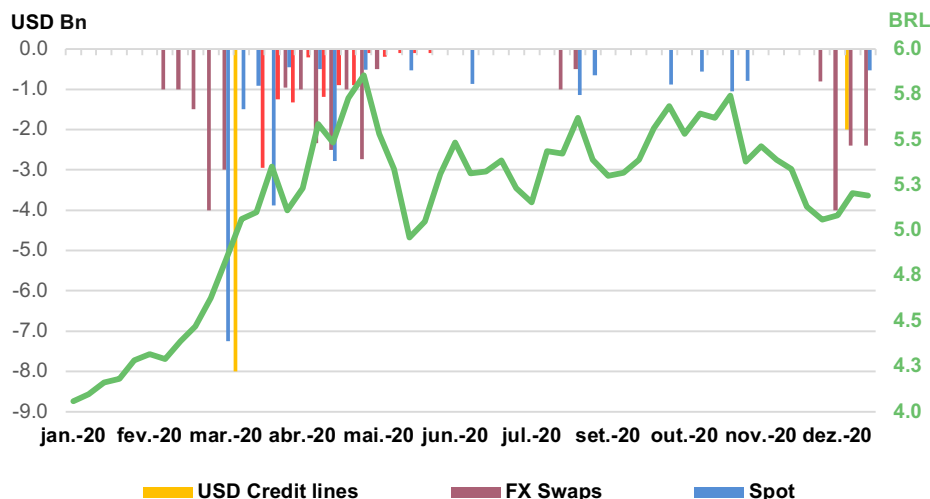
Although common in other jurisdictions, the BCB's lending facilities, collateralised by banks' credit portfolios, played an exceptionally pivotal role during this crisis. For historical reasons, the BCB's role as *lender of last resort* was inactive for nearly 25 years, as institutions feared the misperception on their financial soundness, among other reasons. During this 25-year period, lowering reserve requirements was the main instrument used to enhance financial institutions' liquidity and to direct credit. In 2020, however, partly anticipating a structural project to come alive by the end of 2021,³ the BCB regained its effectiveness as a lender of last resort, supporting liquidity to 51 FIs. By comparison, a reduction in reserve requirements mostly reaches the largest five banks in Brazil.

To secure temporary liquidity in foreign currency, the BCB went beyond the regular offering of dollar lines and carried out repo transactions with dollar-denominated Brazilian sovereign bonds as collateral during the most critical period of the crisis. This action made it easier for Brazilian banks to hold these bonds, providing an alternative source of funding beyond foreign FIs (counterparties), which were also facing liquidity constraints. In total, about US\$9.3 billion was borrowed in foreign currency through this facility. In addition, to reduce volatility and to deal with dysfunctions in the local foreign exchange market, the BCB intervened through spot and derivatives sales amounting to about US\$57.4 billion by the end of 2020 (Figure 10).

To ease prudential regulatory capital requirements, the capital conservation buffer was temporarily reduced, and its re-establishment was set to take place gradually during 2021. In addition, the risk-weight factor for loans granted in 2020 to certain SMEs was reduced from 100% to 85%, which represents an anticipation of the Basel III framework. To guarantee that the capital released with these measures would be used to absorb losses and maintain the flow of credit, the BCB also imposed a temporary restriction on discretionary capital payouts, such as dividend payments, interests on equity capital, share repurchases, and increases in management compensation. Finally, the BCB allowed FIs – with measures related to capital requirement and provisioning – to postpone the due dates of loans for viable debtors whose payment capacity was temporarily affected by the pandemic. These measures allowed firms and households to postpone loan payments and to bridge through the most acute moments of the crisis.

3 The institutional agenda BC# includes the establishment of a permanent liquidity support mechanism to financial institutions. The initiative is scheduled to be implemented by end-2021.

FIGURE 10 FX INTERVENTIONS



By the end of June, three months after the broader set of policy actions, the BCB announced a new round of measures focused on redistributing liquidity in the banking system and the business sector. The BCB allowed smaller FIs to raise funds through Term Deposit with Special Guarantees (DPGE) by the Deposit Insurance Fund, aiming to redistribute the already augmented liquidity within the banking system.⁴ With an assessment that credit was not flowing as desired to small businesses, the BCB allowed FIs to deduct up to 30% of their savings account's reserve requirement balances to fund new credit to finance the working capital of small businesses. Because the yield on this type of reserve requirement is 70% of the base rate, this measure was similar to a *funding-for-lending* scheme, generating almost BRL 60 billion (0.8% of GDP) in new loans. This initiative meant to reduce frictions and drive liquidity to smaller financial institutions and businesses. With these new funding instruments, there was an increase in the balance of liquid assets of medium and small size financial institutions, as well as an acceleration in the growth of credit to micro, small and medium companies, as we show later on Figure 18.

Taking all these measures together, the BCB's actions had the potential to increase liquidity by BRL 1,274 billion, equivalent to about 17.5% of GDP. Similarly, the measures adopted to temporarily alleviate capital requirements of financial institutions had the potential to increase credit supply by BRL 1,348 billion, or about 20% of GDP (Figure 4). Table 1 lists the measures taken by the BCB and their effective use. Additional details and updates to these numbers are available on the BCB's [website](#).⁵ Detailed accounts on measures are provided by Banco Central do Brasil (2020a, 2020b).

4 DPGE is a term-deposit instrument for funding small and medium-sized financial institutions. It grants its holder a right of credit against the issuer while being covered by the Deposit Insurance Fund (Fundo Garantidor de Crédito, or FGC) up to BRL 20 million, for a given investor or a given conglomerate.

5 www.bcb.gov.br/en/about/covid-19-measures

TABLE 1 MEASURES TO SAFEGUARD FINANCIAL STABILITY

	Potential	Implemented
Liquidity Release		
Release of Required Reserves	R\$ 205 bi	R\$ 205 bi
Loan Backed by Corporate Bonds (Debentures)	R\$ 91 bi	R\$ 3 bi
Loan Backed by Guaranteed LF	R\$ 670 bi	R\$ 105.1 bi
Repo of Brazilian Sovereign Bonds	R\$ 50 bi	R\$ 23.2 bi
Change in Required Reserves on Savings Accounts	R\$ 55.8 bi	R\$ 64.4 bi
New DPGE	R\$ 200 bi	R\$ 24.2 bi (ongoing)
LCA Flexibility	R\$ 2.2 bi	R\$ 2.2 bi
	Total	R\$ 491.5 bi
	% of GDP	17.5%
Capital Release		
Overhedge	R\$ 520 bi	R\$ 520 bi
Reduction in ACCP ^{Brasil}	R\$ 637 bi	R\$ 637 bi
Reduction in capital requirement for credit operations to SMEs	R\$ 35 bi	R\$ 35 bi
Reduction in capital requirement for small financial institutions	R\$ 16.5 bi	R\$ 16.5 bi
Reduction in capital requirement on DPGE exposures	R\$ 12.7 bi	R\$ 2.3 bi (ongoing)
Capital Optimization (CGPE)	R\$ 127 bi	R\$ 14.4 bi
	Total	R\$ 1,225.2 bi
	% of GDP	18.4%
Provisioning exemption for loan modifications	R\$ 3,200 bi	R\$ 971.5 bi
Other Measures		
Dollar Swap line with the Fed	USD 60 bi	Active, but not used
	% of GDP	4.1%
Creation of a special credit line for SMEs (PESE)	R\$ 40 bi	R\$ 8 bi
	% of GDP	0.5%
Property as collateral for more than one loan	R\$ 60 bi	Limited impact, around R\$ 0.2 bi
	% of GDP	0.75%
Purchase of Assets in the secondary market		
Purchase of assets in the secondary market by the BCB	N.D.	There were no purchases

Source: Banco Central do Brasil.

While our focus has been on the measures taken by the BCB in response to the crisis, it is worth highlighting some of the important actions taken by the Brazilian government and National Treasury. In addition to the numerous measures put in place to address the health challenges brought on by the pandemic (such as slashing import tariffs in medical supplies and increasing the supply of doctors, nurses, and other medical needs), the federal government implemented one of the largest direct income transfer programmes in the world, with a disbursement of about 4.5% of GDP, reaching more than 60 million Brazilians in need. The sizable fiscal package also included measures to facilitate and subsidise credit to SMEs (0.7% of GDP), as well as programmes aimed at retaining workers (0.8% of GDP), postponing loan payments and others. A detailed list of these programmes is available on the government's [website](#). The Treasury also played an important role during the crisis by adjusting its bond issuance and repurchasing a record amount of government bonds in moments of distress, which we detail next.

Asset purchases

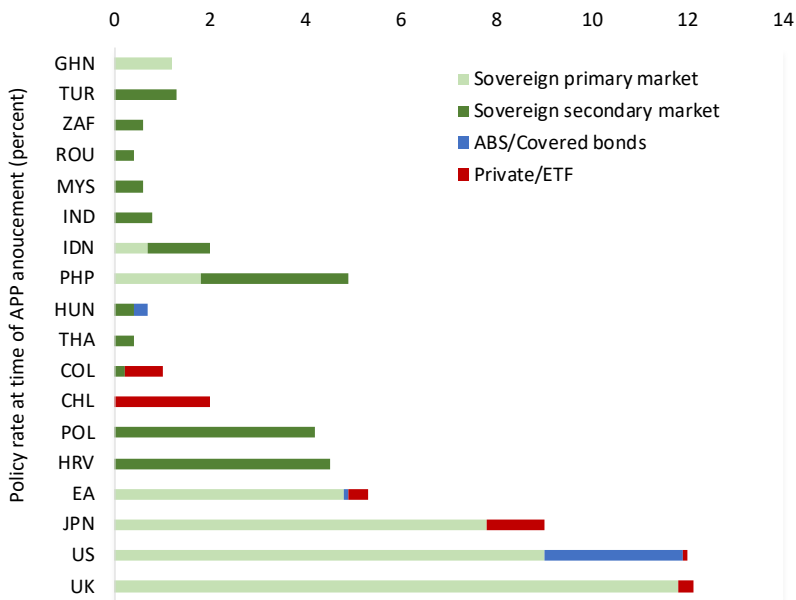
Differently from the response to the 2008 Global Financial Crisis, many emerging economies resorted to unconventional policies in response to the Covid-19 pandemic shock.

Figure 11 shows that several EME central banks implemented some type of asset purchases during 2020 (Drakopoulos et al. 2020), purchasing both private and government bonds. However, differently from advanced economies, Figure 12 shows that these interventions mostly focused on addressing specific disruptions in their markets, rather than providing additional monetary stimulus (Arslan et al. 2020).

Unlike other jurisdictions, in Brazil it is the National Treasury that acts as a *market maker of last resort* for the government bond market. The BCB has a mandate to buy or sell government bonds, exclusively, to execute monetary policy. This means that, historically, the NT needs to maintain a relatively sizable balance at the BCB (between 5% and 10% of GDP) to be used in moments of financial stress. The Treasury can dispose of this balance, not only to adjust its issuances, but also to repurchase bonds as needed. This role of market maker of last resort has been played by the Treasury in many past crises and this time was not different. The Treasury repurchased the largest amount of bonds ever of BRL 36 billion (0.5% of GDP), and avoided auctions for several weeks.

Unfortunately, during 2020 the fiscal packages demanded a sizable increase in new bond issuances which, along with the disruptions caused by the crisis, significantly reduced the Treasury's balance, reducing market's confidence in its ability to engender its role as market maker of last resort.

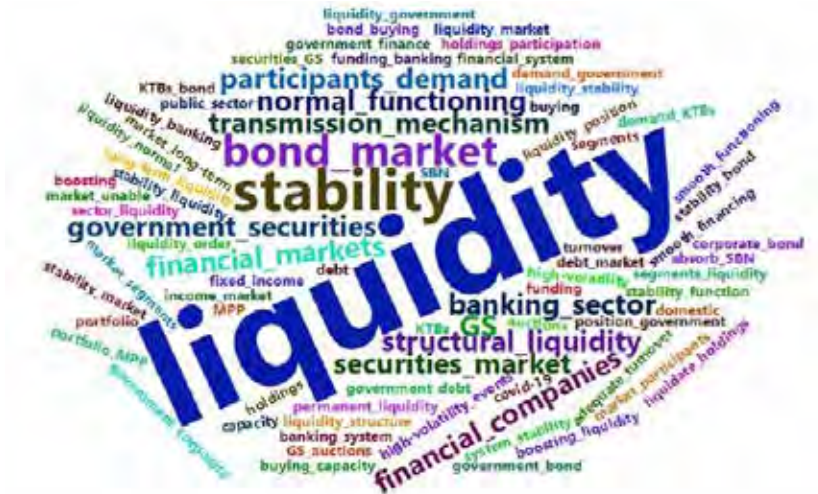
FIGURE 11 CENTRAL BANK ASSET PURCHASES (PERCENT OF GDP)*



Notes: Policy rate at APP announcement (%): HRV - UK < 0.5 / HUN - POL < 1 / ZAF - PHP < 6 / GHN & TUR < 15. Emerging market central banks bought government and private sector debt to help keep markets functioning.

Source: IMF.

FIGURE 12 CENTRAL BANK BOND PURCHASE IN EMERGING MARKETS



Note: Central banks: Chile, Colombia, Hungary, India, Indonesia, Korea, Mexico, Poland, Romania, Philippines, South Africa, Thailand, Turkey.

Source: Arslan et al. (2020) and authors.

Within this environment, in May 2020, in response to the Covid-19 crisis, the Brazilian Congress approved an amendment to the Constitution, valid through 2020, which, among other things, allowed the BCB to buy and sell public and private bonds in the secondary market to face the financial stability effects of the pandemic.⁶ While the option to intervene in the public bond markets was not used by the BCB, it increased markets' confidence that the bond market had a shield beyond the National Treasury's depleted balance.

In addition, as demand for liquidity increased and volatility spiked, the Treasury had to shorten the maturity of its new issuances to terms closer to those used on open market operations. As this action started to compete with the BCB's actions, to a certain extent due to the conjunctural liquidity demand, the BCB also shortened the terms of its open market operations. Eventually, the National Monetary Council (Conselho Monetário Nacional, or CMN)⁷ authorised, as an exception, the BCB to transfer part of its foreign exchange rate's profits to the Treasury in the middle of the year, instead of by year-end.⁸ All these actions required a high degree of coordination between the Treasury and the BCB.

In the end, the BCB did not need to resort to purchases of public or private bonds. The first set of measures announced by the BCB to increase overall liquidity and capital availability to the financial sector, the fiscal measures adopted by the government to support the

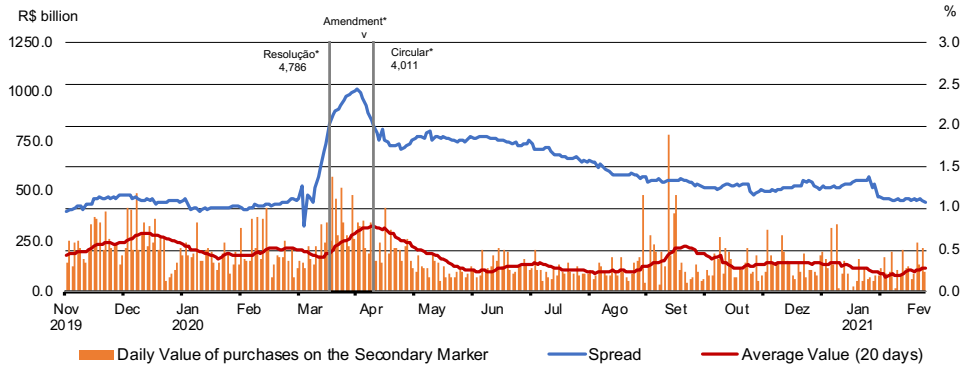
6 While the Brazilian legislation already allowed the BCB to purchase public bonds for monetary policy purposes, the amendment to the Constitution allowing for the purchase of private assets and public assets for financial stability purposes gave the BCB new potential instruments to use during the crisis.

7 The CMN is constituted of the Finance Minister (president), the Central Bank Governor and the Finance Minister's Special Secretary.

8 Amounting to BRL 325 billion (4.5% of GDP).

economy, and the actions taken by the Treasury, as well as the BCB's assurance that it would act to stabilise public and private bond markets, if needed, were enough to stabilise local markets in Brazil (Figure 13).

FIGURE 13 VOLUME AND SPREAD OF DEBENTURES WITH RATING AA-A TRADED ON THE SECONDARY MARKET



Note: Resolução 4, 786/2020 and Circular 4, 011/2020 established the Special Temporary Liquidity Facility. On 3 April, the Amendment to the Constitution was approved by the House of Representatives.

Source: Banco Central do Brasil.

Finally, the timely and strong responses of central banks in developed economies were key to restore markets' confidence and to reverse the risk-off attitude towards emerging economies.

As a result of all these unprecedented measures, markets in Brazil stabilised and the financial system was able to withstand the most stressed period of the crisis. Most importantly, credit continued to flow in the banking system, reaching both businesses and households in need. Figure 14 shows that during 2020 credit increased substantially, particularly to the corporate sector. Figure 15 shows that the measures implemented during that period also allowed for a continued decline in credit costs. Figure 16 shows that the increase in credit reached not only large but also small and medium-sized businesses.

FIGURE 14 OUTSTANDING CREDIT
(YEAR-ON-YEAR)

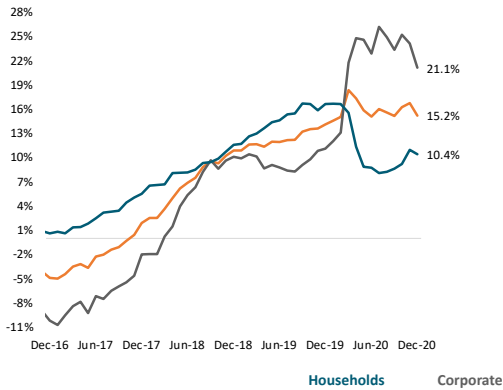
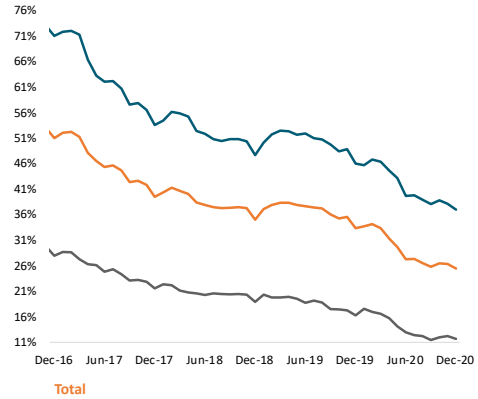
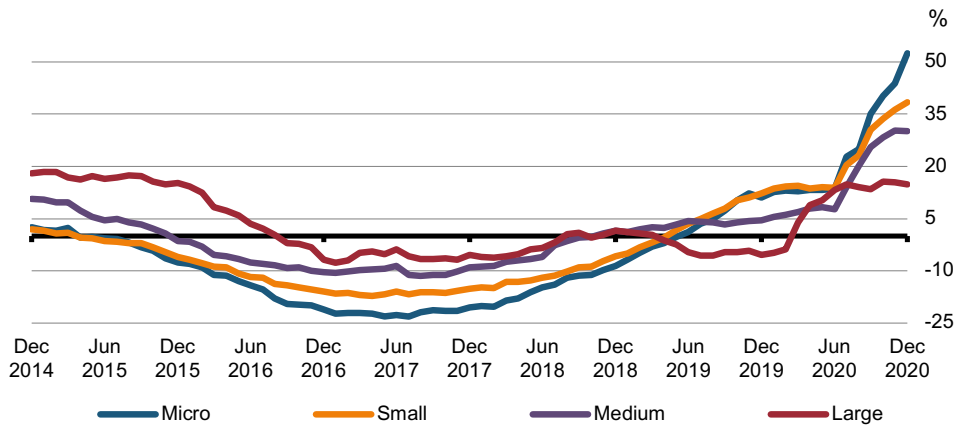


FIGURE 15 CREDIT COSTS
(% PER YEAR)



Source: Banco Central do Brasil.

FIGURE 16 CREDIT GROWTH, BY COMPANY SIZE (YEAR-ON-YEAR)



4. CONCLUSION

Covid-19 brought severe economic consequences for the global economy. Worldwide, countries adopted voluntary or mandatory measures to restrict population mobility and slow the virus spread down. These much-needed efforts led to sharp declines in aggregate demand and unprecedented declines in output, particularly during the first half of 2020. Worldwide, fiscal and monetary authorities responded with unprecedented measures, providing lifelines to households and firms as well as safeguarding the well-functioning of credit and financial markets.

The Central Bank of Brazil lowered its policy rate to a record low level and implemented measures with the potential to release liquidity and ease capital requirements of about 17% and 20% of GDP, respectively. The government implemented a sizable income transfer programme and several credit programmes targeting small and medium-sized businesses, among other initiatives.

Following a sharp decline in demand and output during the first half of 2020, Brazil recovered strongly in the third and fourth quarters and should continue its path to recovery as the vaccination programmes unfold internally and abroad, and economic activity gains momentum.

Going forward, countries will need to face the challenges brought by the fiscal deterioration spurred by the pandemic. Before the shock, Brazil was in the initial phase of a long fiscal adjustment process, with the ‘spending cap rule’⁹ as the main anchor. The necessary measures taken during 2020, which were passed by Congress as an emergency exception to the spending cap, increased the government’s gross public debt by almost 15% of GDP, further limiting room to manoeuvre in future crisis. With such an increase in indebtedness, investors have questioned whether the spending cap, by itself, is able to guarantee public debt sustainability. Reducing uncertainty regarding debt sustainability is therefore key to a continued recovery process and to avoiding a painful increase in the neutral rate of interest, which would make the path to recovery harder.

REFERENCES

Arslan Y, M Drehmann and B Hofmann (2020), “[Central bank bond purchases in emerging market economies](#),” *BIS Bulletin* No. 20, Bank for International Settlements.

Banco Central do Brasil (2020a), *Financial Stability Report*, October.

Banco Central do Brasil (2020b), *Financial Stability Report*, April.

Barroso, J and F Nechio (2020), “Financial market development, monetary policy and financial development in Brazil,” in [Financial market development, monetary policy and financial stability in emerging market economies](#), Volume 113, Bank for International Settlements, pp. 55-65.

Drakopoulos D, D Goel, F Natalucci and E Papageorgiou (2020), “[Emerging and Frontier Markets: Policy Tools in Times of Financial Stress](#)”, IMF Blog, 23 October.

9 The spending cap’s constitutional amendment, from 2016, limits expenditure growth to realised inflation.

ABOUT THE AUTHORS

Fernanda Nechio is the Deputy Governor for International Affairs and Corporate Risk Management at the Banco Central do Brasil (BCB).

Fernanda started her career in July 2009 at the Federal Reserve Bank of San Francisco, where she took several positions at the Economic Research Department. Fernanda completed her PhD. and M.A. at Princeton University. Prior to that, she earned her Economics master and bachelor degrees at the Catholic University in Rio de Janeiro, Brazil. She has also served as a special-term lecturer at the Catholic University in Rio de Janeiro and at UC Berkeley.

Her main research interests are in the areas of International Finance and Monetary Macroeconomics, with focus on exchange rates, price setting, demographics, and monetary policy. She has published articles in top academic journals such as the *American Economic Review*, the *Journal of Monetary Economics*, and the *Journal of the European Economic Association*.

Bruno Serra Fernandes is the Deputy Governor for Monetary Policy at the Banco Central do Brasil.

Prior to that, he was Senior Vice President, responsible for the proprietary fixed income desk at Banco Itaú Unibanco from 2014 to 2018.

Bruno also worked as strategist at BankBoston and senior portfolio manager at Banco Itaú. He started his career as portfolio manager for multimarket funds at BankBoston Asset Management in 2002.

Bruno Fernandes holds a bachelor's degree in Economics from IBMEC/RJ and a master's degree in Economics from University of São Paulo.

CHAPTER 11

The Central Bank of Chile's policy response to the Covid-19 crisis

Pablo García Silva¹
Central Bank of Chile

1 INTRODUCTION

The Covid-19 pandemic created an unprecedented economic crisis. At a time when the Chilean economy had just begun to recover from the effects of the social unrest of the end of 2019, the pandemic and the adopted containment measures caused the largest economic contraction in 35 years, reaching its steepest fall in 2020Q2 with a 14.1% year-on-year GDP reduction and almost 2 million jobs lost. The shock hit particularly hard the service sector, where activity and employment fell the most and the recovery has been slower.

For policy design, it is key to understand that conceptually this crisis is very different from past recessions in either advanced or emerging economies, which had at their root a large increase in leverage (a *boom*) that eventually became unsustainable (a *bust*). Policies aimed at managing this process tend to require a careful deleveraging of the economy, while providing support for aggregate demand. The Covid crisis differs from this process in several aspects that are worth examining.²

- The considerations for moral hazard were limited at the onset of the crisis. In contrast with earlier recessions, there is no need now to tailor policies so as to prevent benefiting those sectors or agents that are deemed responsible for the unsustainable boom. Thus, a broad-based design of policies was called for early on.
- In a typical financial crisis or recession, managing the deleveraging is a key issue. In the Covid crisis, the policy response has instead aimed at levering up and facilitating firms to take on more debt. This was possible not only because the financial system

1 This chapter is an abridged version of a Central Bank of Chile policy paper (García 2021). I thank Miguel Fuentes and Juan Wlasiuk, as well as technical staff from the Monetary, Financial, Legal and Market Divisions of the CBCh, for their support. All errors should be attributed to the author.

2 For a thorough discussion on theoretical and policy challenges from the Covid-19 crisis, see the recent workshop held by the Central Bank of Chile (www.bcentral.cl/en/content/-/details/covid-19-economic-implications-and-policy-lessons-12th-13th-january-2021-).

was in good health when the pandemic hit, but also because the way to respond to a large (but by nature transitory) income shock is by taking on more debt or using up savings (e.g. Arellano et al. 2020).

- The Covid crisis represents a strong negative supply shock to specific sectors of the economy (those that depend more on social and personal interaction, such as restaurants and hospitality). Aggregate demand support clearly cannot compensate for the contraction in these sectors, but it can help prevent negative spillovers to the rest of the economy. Over time, optimal policies should shift from broad liquidity support to the reallocation of resources away from those sectors that have suffered the most permanent damage.
- The speed at which this crisis has unravelled is also unique. Response times have been measured in weeks and days instead of months or quarters. The performance on this has been heterogeneous. Due to legislative and political economy considerations, the response times in the health and economic areas have been diverse across jurisdictions. In contrast, autonomous central banks with a clear mandate and a credible framework have reacted remarkably fast.
- Finally, the world will emerge from this crisis poorer and more unequal. This is especially relevant for Latin America, where structural factors such as labour market informality have not buffered the impact of the destruction of formal jobs (Leyva and Urrutia 2021). Small and medium-sized enterprises (SMEs) represent a higher fraction of GDP in Latin America than in the developed world. Since these firms have less access to financing, they will have more difficulties recovering (if they are able to survive at all). In order to weather this profound economic shock, the initial policy responses will need to be redesigned. Several elements – such as debt relief, productive restructuring, more targeted support and research – need to be enhanced (Arellano et al. 2020, Alfaro et al. 2020).

This chapter will review the monetary and financial policy response to the Covid-19 crisis in Chile. It is organised as follows. In the next section, the main challenges for policy design will be presented. Section 3 will detail some of the specific policy measures implemented in Chile, and Section 4 will show the pandemic's impact on the balance sheet of the Central Bank of Chile (CBCh) as well as other macro-financial metrics. Section 5 concludes.

2 CHALLENGES IN THE IMPLEMENTATION OF UNCONVENTIONAL MONETARY POLICIES

The challenges faced by the CBCh during the pandemic were not dissimilar to those faced in other jurisdictions. Both bank and non-bank intermediation is significant in Chile, and therefore to achieve the goals of both price and financial stability policies need to be tailored so as to work effectively through both channels. This section highlights some of the key trade-offs involved.³

The role of the banking system as a transmitter of monetary policy through lending capacity is not usually limited in the face of idiosyncratic shocks, or even business-cycle frequency shocks, but the fact that the Covid shock has been large and widespread stressed this ability. Therefore, many of the challenges for monetary policy that arose as a result of the pandemic had to do with how to ensure that central bank liquidity injections would actually be transmitted to the real economy:

1. **maturity mismatch**, which can become problematic if the traditional pass-through of shorter-term central bank lending rates on longer maturities is weakened due to higher risk premia;
2. **liquidity mismatch**, since the funding by the central bank needs to be rolled over frequently, whereas banks are providing refinancing to their clients;
3. **leverage**, as the increase in funding from the CBCh, if funnelled to credit, would potentially squeeze the amount of equity available;
4. **collaterals**, as the liquidity provided by the CBCh is backed by appropriate guarantees by the banks, but in essence is limited in moments of high stress; and
5. **credit risk**, as banks increase their loans to firms that are affected by the pandemic, which can potentially result in higher risk.

In order to tackle these risks, the CBCh responded by injecting resources into the financial system, but with significant changes to the traditional implementation modalities. Specifically, (1) the CBCh provided long-term financing in order to mitigate maturity mismatch; (2) the CBCh, with the prior opinion of the bank regulator, the Financial Market Commission (Comisión para el Mercado Financiero, or CMF), relaxed regulatory liquidity requirements through a temporary suspension of maturity mismatch requirements; (3) the CMF allowed a reduction of credit risk weights for loans guaranteed by the Treasury of Chile, the Chilean Economic Development Agency (CORFO), and the Small Business Guarantee Fund (Fondo de Garantía para Pequeños Empresarios, or FOGAPE) from 100% to 10% so as to mimic sovereign risk; and (4) the CBCh significantly broadened collaterals to include corporate bonds, commercial paper, and commercial loans.

3 The Annex lists the main measures adopted in different areas.

Aside from the banking system, non-bank intermediation in Chile is certainly significant. The institutional investor base is large, through mutual funds, pension funds and insurance companies, and these agents have also been susceptible to large portfolio shifts – most notably, a shortening of portfolios, a dollarisation of portfolios, and liquidation of equity. Sudden portfolio adjustments, triggered by local or global events, could have a disruptive effect on domestic financial markets. If asset liquidation is concentrated in local market securities, in particular bank instruments, it could generate a significant increase in the banking system's funding costs by reducing the possibility of rolling over short term liabilities. In this respect, the main challenges facing Chile have been related to (1) the massive legal changes allowing the withdrawal of pension funds, as well as other portfolio shifts; (2) the dollarisation of portfolios, in particular when derived from sudden and massive shifts between funds by pension fund affiliates, as have increasingly taken place in Chile; and (3) the shortening of maturities for mutual funds and insurance companies.

In response to these challenges, the CBCh implemented a series of measures that included (1) the purchase of longer-date as well illiquid assets in stressed capital markets to accommodate private reshuffling of portfolios; (2) a special cash purchase/forward sale programme (CCVP) for bank instruments; (3) provision of dollar liquidity; and (4) the approval of a Constitutional change to allow the purchase of treasuries by the central bank in secondary markets.

3 MAIN CREDIT-EASING POLICIES AND THEIR IMPLEMENTATION CHALLENGES

As mentioned above, the CMF, the Ministry of Finance, and the CBCh implemented an unprecedented set of measures to mitigate the economic impact of the health emergency. The rapid adoption of such measures by the various market players was not without challenges. The main characteristics of these measures are described below.

3.1 The central bank implements the Financing Facility Conditional on Increased Lending (*Facilidad de Crédito Conditional al Incremento de las Colocaciones, or FCIC*)

This is a four-year lending facility at the monetary policy rate at its effective lower bound (ELB), which is assessed to be 0.5%. To incentivise uptake even if banks expect the ELB to be revised downward, a clause for automatic refinancing at a lower rate was included. Moreover, following some examples from other jurisdictions, the amount of liquidity provided to each bank was linked to their credit performance. This link went through a number of stages. Early on, as cash flows were significantly stressed, it was important to allow the total stock of credit to absorb the immediate impact of the crisis. To stimulate aggregate credit growth at this stage of the crisis, funding to banks was first linked to the growth of credit *stocks*. However, the long duration of the crisis due to the resurgence

of infections and health restrictions has changed the focus towards facilitating debt refinancing at longer maturities. Thus, the new design of the facility links bank funding to the flow of credit, which includes refinancing operations.

The significant increase in bank funding from the FCIC could not be accommodated through the standard set of collateral instruments. Hence, the CBCh significantly expanded the scope of instruments eligible for collateral in money market operations, to include so far loans guaranteed by the state and well-performing loans.

It is interesting to note that the amount of liquidity provided through the FCIC was linked to the overall growth of the stock or flow of the loan portfolio by banks, but was not targeted at specific loans. By the same token, the broadening of collaterals was not aimed specifically at boosting loan origination to those sectors. Rather, credit guarantees (detailed later) played the key role for incentives. These credit guarantees from the state also meant that leverage was not squeezed, as the bank regulator allowed a reduction in risk weights on those loans that benefited from credit guarantees. The regulator also waived the need for higher provisions on refinancing existing loans.

So far, the specific calibration of these measures has been revisited every six months or so. The first line (FCIC₁) was implemented in March 2020, and saw an uptake in bank funding of close to 10% of GDP. The second line (FCIC₂) was implemented in June 2020 but had a much more muted reception, likely due to the higher perceptions of risks outstanding. The third line (FCIC₃) was recently announced in January 2021 and aims at facilitating the funding of refinancing operations of well-performing or already-guaranteed loans.

A very important effect of this measure was that it reduced the demand for private borrowing from banks, both in time deposits and bonds. The stocks of both securities have been diminished because they have been replaced by the FCIC (its duration is four years, equivalent to the duration of bond financing). The stock of deposits today is equivalent to that in 2012.

3.2 Government expands the Small Business Guarantee Fund (FOGAPE)

The FOGAPE has long been a popular and focused instrument for the funding of SMEs. The government decided to tailor it so as to use it as a vehicle for a massive guarantee programme designed for the Covid crisis. Its size and scope were broadened significantly during the second quarter of 2020, with guarantees of US\$3 billion that could be levered up to \$24 billion in new credits. This represented a ten-fold increase in the programme (reaching 10% of GDP in potential new credits), deployed over a much shorter period of time (three months instead of several years). The cap on sales for eligibility is increased from \$1 million a year to \$40 million a year.

The extent of credit-loss coverage was capped at 15% of individual credit (for reference, the median credit loss during the Global Financial Crisis was 9%), with a deductible of 1–2% of credit loss. At first these guarantees were provided only for new credits, and banks

initially agreed to automatically refinance other credit operations with a grace period of six months. The thrust of this was that the incentive for refinancing was well internalised by banks early on in the Covid crisis, and thus incentives needed to be provided to reduce credit risk on new loans instead. Lending terms were standardised (36-month loans with a six-month grace period) and, during the legislative process, a cap on the lending rate was established at 3.5%.

The features of this guarantee program were well tailored to the view early on that the immediate shock of the crisis would last a few quarters. Now, as the more long-lasting effects are starting to be experienced, the parameters of the programme have been adapted to this new stage through FOGAPE reactiva (2.0), legislated in early 2021, which allows for increased flexibility in re-refinancing of Covid and non-Covid loans and also in the maximum lending rate allowed to banks.

In addition to the waivers on liquidity regulation mentioned above, other regulatory and prudential measures were adopted. Banks voluntarily agreed to lower dividend distributions, the CMF allowed the transitory freezing of provisioning of voluntary refinancing of well-performing bank and non-bank loans to households, and the implementation Basel III was delayed for a year. Easing the funding from capital markets also was promoted through the 'Crece' fund, which provides guarantees usable by non-bank providers of SME financing. Reforms to ensure the speedier issuance and registration of securities and convertible bonds were implemented, as well as normative changes for REPOs for banks so as to link risk weights to underlying assets and not counterparts.

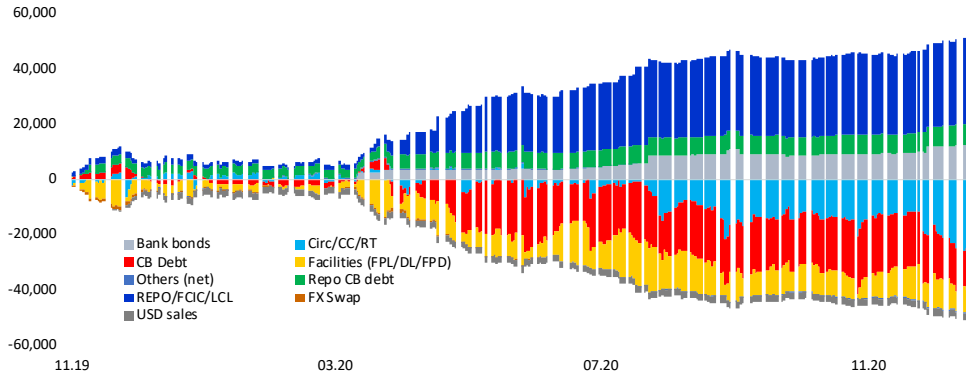
3.3 A constitutional amendment is passed in mid-2020 with broad support in Congress

This allows the CBCh to purchase government treasuries in the secondary market, to face conditions of stress and financial instability. Note that government treasuries have already been eligible guarantees for regular money market operations for several years, but the outright purchase of those securities, or their use in REPO operations, was not legally possible. So far, this new tool has not been used

4 IMPACT AND ASSESSMENT OF POLICIES ADOPTED BY THE CENTRAL BANK OF CHILE

The CBCh's reaction to the crisis was rapid, decisive, and unprecedented. Among the first measures was the cut of the monetary policy rate (by 75 basis points on 20 March, and by 50 basis points on 31 March) to its technical minimum (0.5%). This monetary policy relaxation, as well as the credit-easing measures described in the previous section, had a significant impact.

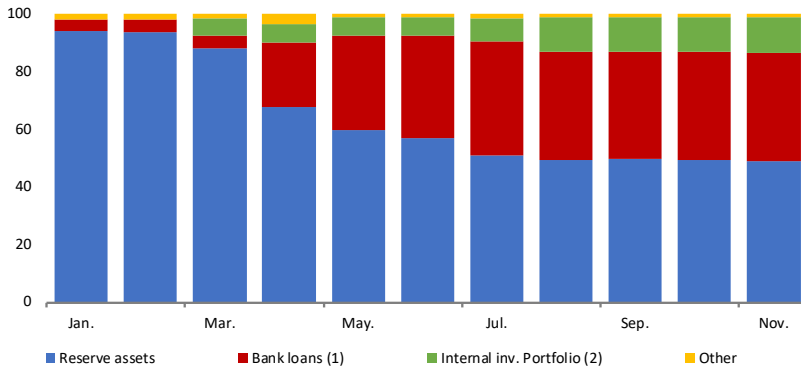
FIGURE 1A SOURCES OF LIQUIDITY MOVEMENTS* (US\$ BILLIONS)



Note: * FCIC: Conditional Financing for Increased Loans; LCL: Activation of liquidity facility; FPL: Standing liquidity facility; FPD: Standing deposit facility.

Source: Central Bank of Chile and FMC.

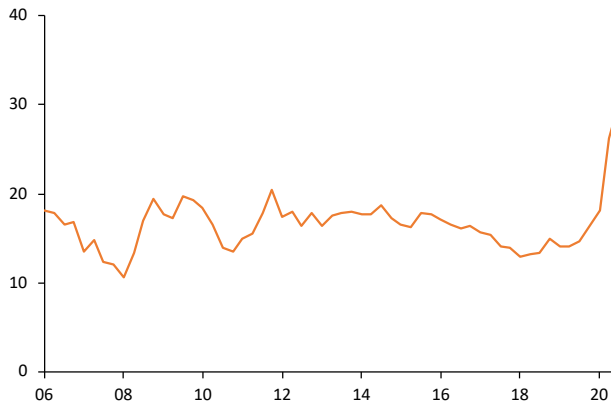
FIGURE 1B CBCH'S ASSET COMPOSITION (%)



Note: (1) Includes FCIC, repos, and standing liquidity facility. (2) Includes bank bonds, time deposit, and CCVP purchases.

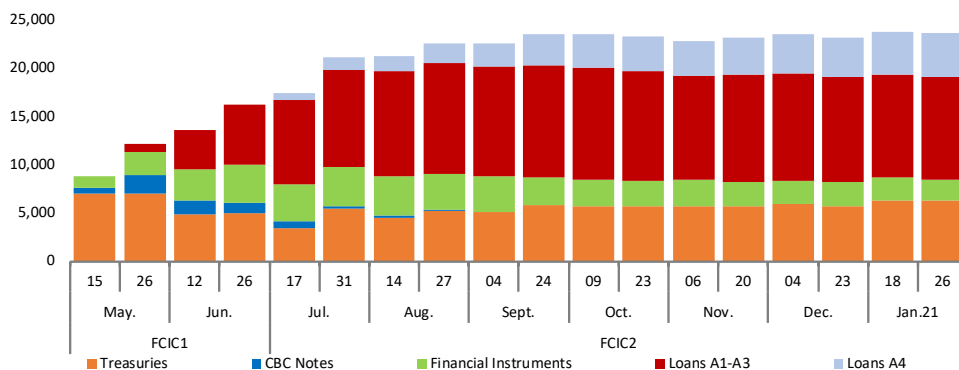
Source: Central Bank of Chile and FMC.

FIGURE 1C ASSETS ON THE CBCH'S BALANCE SHEET (% OF GDP)



Source: Central Bank of Chile and FMC.

FIGURE 1D ACCEPTED COLLATERALS BY THE CENTRAL BANK OF CHILE ON LOAN OPERATIONS (FCIC / REPO) (US\$ BILLIONS)



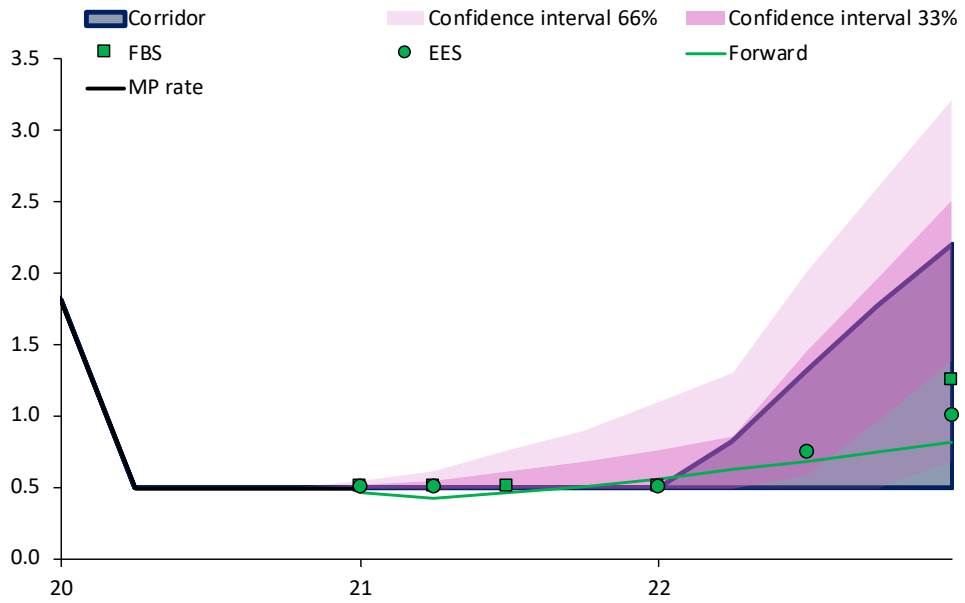
Note: A# is the risk classification for individual loans. The higher the # the higher the risk. FCIC3 will broaden to A5 - A6 with government guarantees.

Source: Central Bank of Chile and.

The balance sheet of the CBCh expanded significantly and collaterals were broadened. The provision of liquidity via the purchase of both CBCh and commercial bank bonds, as well as the FCIC and other facilities, implied an extraordinary expansion of the CBCh’s balance sheet. Assets increased from 18.1% in March 2020 to 30.3% in September 2020, mostly due to liquidity to banks through the FCIC and bond purchases. The expansion of the set instruments accepted as collateral was very effective. On 6 May 2020, collaterals eligible for the FCIC were expanded to include commercial loans that were individually rated as high-quality loans, and more recently entire commercial portfolios with some form of state guarantee (Figure 1).

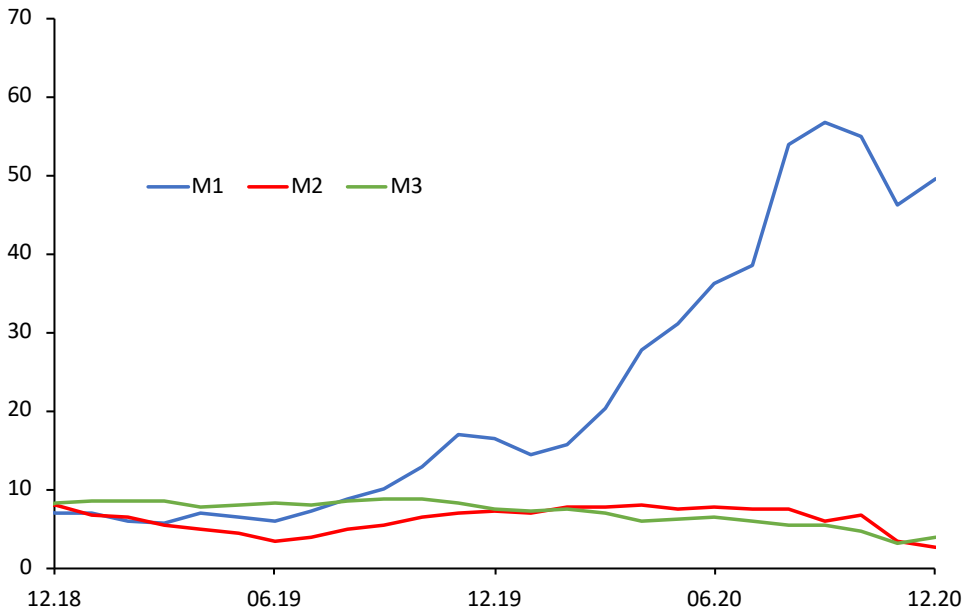
The CBCh’s board implemented aggressive forward guidance in its monetary policy. Since March 2020, the central bank’s *Monetary Policy Report* has reported a corridor for monetary policy that displays the implications for the monetary policy in the baseline and sensitivity scenarios for growth and inflation. In the December 2020 *Monetary Policy Report*, the Board stated that “it will maintain the high monetary stimulus for an extended period of time, in order to ensure the consolidation of the economy’s recovery and compliance with the Bank’s objectives. In particular, it foresees that the MPR will remain at its minimum level over much of the two-year monetary policy horizon. Unconventional measures will continue in place” (Central Bank of Chile 2020: 46). Moreover, the high demand for cash from households and firms has required an aggressive logistical effort to ensure the appropriate supply of notes and coins in the economy, in a context in which the pandemic has slowed their circulation (Figure 2).

FIGURE 2A MONETARY POLICY RATE CORRIDOR* (%)



Note: * The corridor is built following the methodology of Box V.1 of the March 2020 Monetary Policy Report, Central Bank of Chile. It includes the Financial Brokers Survey (FBS) of December 2nd, the Economic Expectations Survey (EES) of Nov 9th and the forward curve derived from a 10-day average of financial assets until December 2nd.
Source: Central Bank.

FIGURE 2B MONETARY AGGREGATES (REAL ANNUAL CHANGE, %)



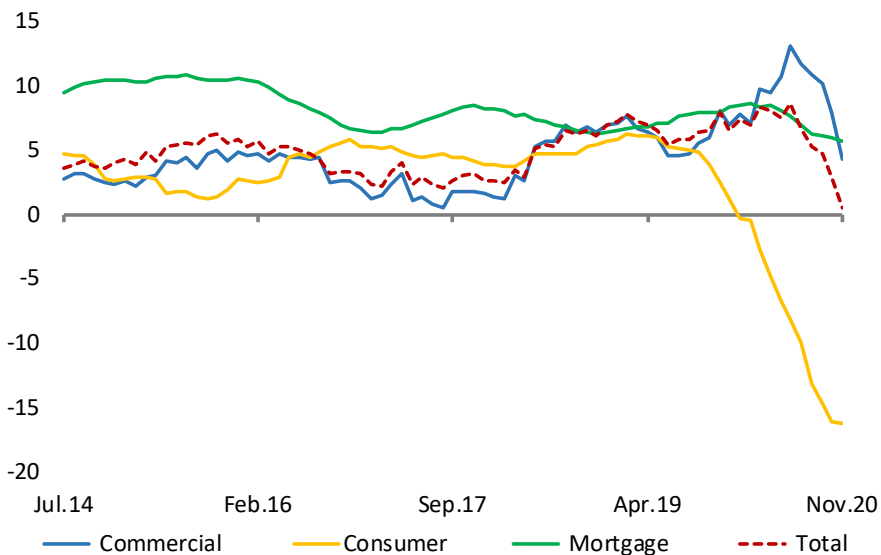
Source: Central Bank of Chile.

Assessing the effect of policies has always been a difficult task. In the current context, in the midst of an unprecedented crisis and after the application of multiple regulatory changes, fiscal measures and unconventional monetary stimuli, such an endeavour becomes even more challenging. Nevertheless, some important conclusions can be drawn regarding the effectiveness of the adopted policies.

Credit provision accelerated to the corporate sector, helped by guarantees and liquidity provision. The first evidence comes from credit dynamics, which suggest a key role for the measures adopted by the CBCh and the government. During the second quarter of 2020, the period with the strictest mobility restrictions, the commercial portfolio recorded strong growth despite the economic contraction, favoured by the support measures implemented by the authorities (Figure 3).

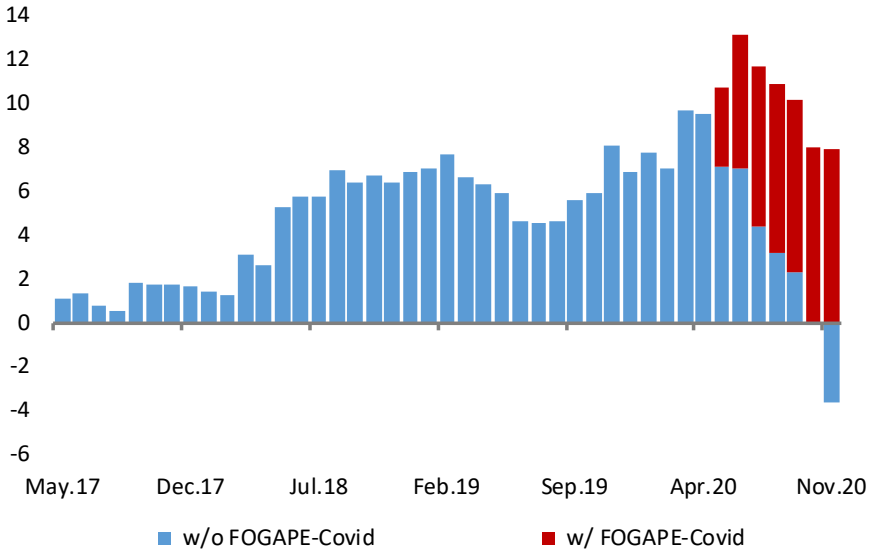
The countercyclicality of commercial credit has been a feature in several jurisdictions. It is noteworthy that this countercyclicality of credit during the current crisis breaks the traditional relationship observed in the past, not only in Chile but also in several other jurisdictions (Figure 4).

FIGURE 3A GROWTH OF LOANS (REAL ANNUAL CHANGE, %)



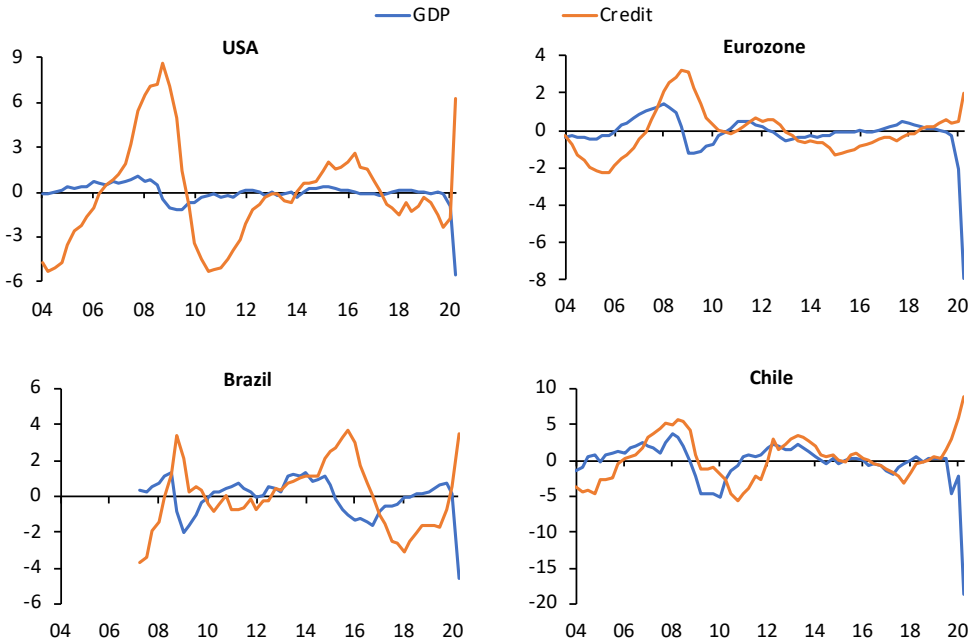
Source: Central Bank and FMC.

FIGURE 3B GROWTH OF COMMERCIAL LOANS (REAL ANNUAL CHANGE, %)



Source: Central Bank of Chile and FMC.

FIGURE 4 ECONOMIC ACTIVITY AND CREDIT CYCLES* (DEVIATION FROM TREND, %)



Note: * Calculated as the difference between the log of the GDP level and credit, relative to a trend calculated using a HP filter.

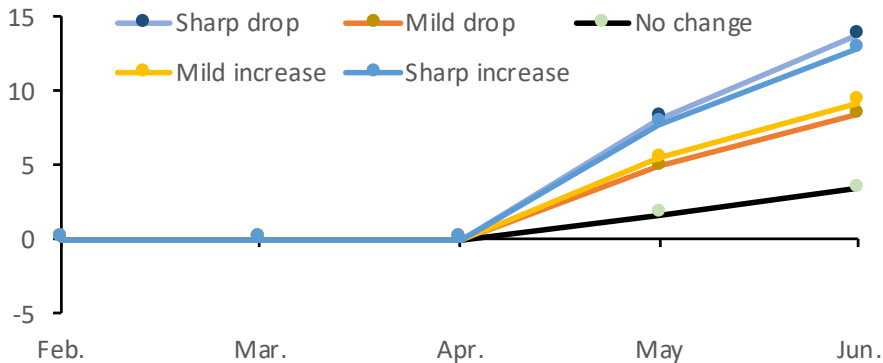
Source: Central Bank of Chile.

Loans granted through the FOGAPE Covid-19 programmes targeted, to a greater extent, companies that had significant falls in sales. Research using matched tax and financial data at the firm level shows that the loans granted under the FOGAPE Covid-19 programmes have mostly gone to businesses that recorded a major reduction in sales. Among companies that were not eligible for these programmes because of their sales levels, there was a significant increase in credit to mega-firms. In terms of timing, credit to micro, small, and medium-sized enterprises (MSMEs) and to large firms only began to increase in May, when the FOGAPE Covid-19 programmes were implemented (Figure 5 and Huneeus et al. 2021).

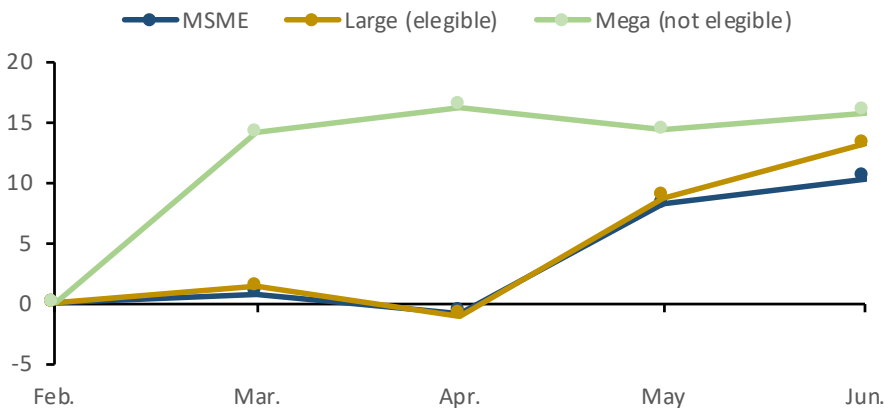
The preliminary evidence also suggests that increased access to credit has been relevant in softening the real impact of the crisis, by mitigating the negative impact of the shock on firms' investment and employment decisions (Albagli et al. 2020).

FIGURE 5 STOCK OF COMMERCIAL CREDITS BY SIZE AND BEHAVIOUR OF SALES (CHANGE IN ANNUAL VARIATION COMPARED TO FEBRUARY 2020, %)

a) Credits granted with FOGAPE Covid-19 programmes



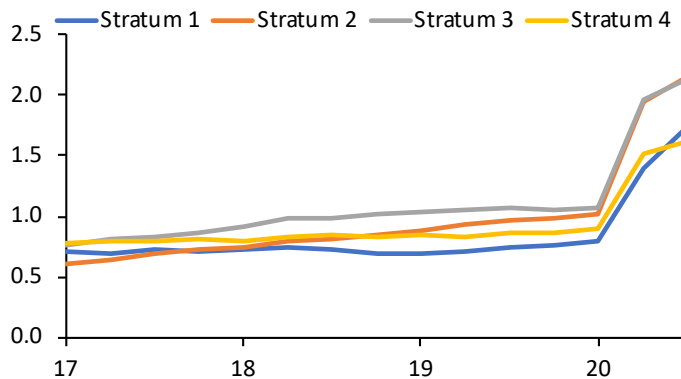
b) Stock of commercial credits



Source: Central Bank of Chile and FMC.

Leverage has increased, posing challenges going forward. The significant increase in business leverage – which was necessary to get through the most complex months of the pandemic and to prevent a large number of businesses from stopping operations – will present challenges going forward. Indebtedness has grown across the board, though most intensely in medium-sized firms and in the retail, business and personal services sectors (which are among the hardest hit by health measures and households' precautionary behaviour). In a context of partial recovery of activity, the considerable fall in profits and the aforementioned increased indebtedness could limit the capacity of companies to embark on new projects (Figure 6).

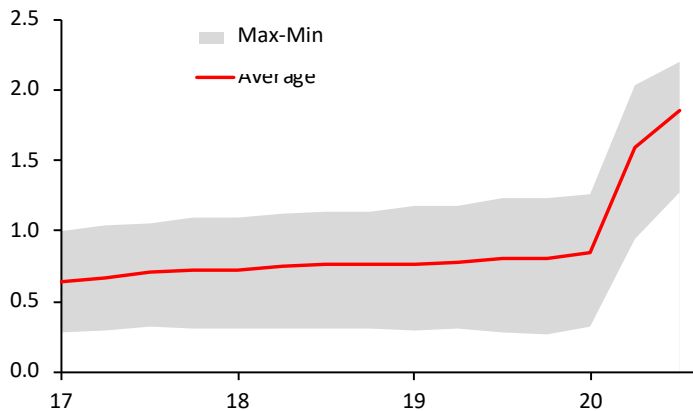
FIGURE 6A INDEBTEDNESS^{1,2} (DEBT/SALES RATIO)



Notes: 1 The debt to sales ratio is calculated at the level of each firm for each period. The numerator is the stock of banking and foreign debt of each firm. The denominator is calculated as the average of the real sales of each firm (deflated by the UF) between the third quarter of 2018 and 2019. The indebtedness by sales stratum is calculated as the median among the firms of each stratum. 2 Stratum 1 and 2: annual sales less than UF 25,000. Stratum 3: annual sales greater than UF 25,000 and less than UF 100,000. Stratum 4: annual sales greater than UF 100,000.

Sources: Central Bank of Chile, FMC and National Statistics Institute

FIGURE 6B INDEBTEDNESS: SELECTED ECONOMIC SECTORS³ (DEBT/SALES RATIO)



Notes: 1 The grey area indicates the maximum and minimum debt-to-sales ratio among the selected sectors for each period. The included sectors are: business services, housing services, financial services, personal services, commerce, restaurants and hotels, industry, construction and transport.

Sources: Central Bank of Chile, FMC and National Statistics Institute

It should be noted that the large increase in the asset size of the CBCh balance sheet has not been through a traditional quantitative easing programme like those implemented in the recent past by major central banks. The bulk (approximately two-thirds) of the increase in the balance sheet has come through direct liquidity provision to the banking system, while the remainder has come from the purchase of bank bonds, central bank notes, and term deposits. There are several reasons for this peculiarity. On the one hand, the special characteristics of this crisis implied that ensuring that support reached those sectors most affected by the lockdowns and the pandemic was more important than overall traditional monetary policy expansion. The latter, for the reasons discussed above, faced a plethora of potential hurdles in its transmission mechanism. Hence the focus on cheap liquidity provision linked to the credit growth by banks to those segments most affected.

On the other hand, due to institutional constraints, large-scale purchases of government bonds for monetary policy purposes is not part of the toolkit available to the central bank. The recent constitutional amendment lifted some of these restrictions, but tailored the use of this policy to financial stability purposes and not monetary policy. As mentioned above, the CBCh did pursue a significant asset purchase programme through purchases of bank bonds and bank deposits. However, there is a natural limit to the role of any monetary authority in becoming the main funding vehicle in the fixed income market to banking institutions, beyond the regular liquidity provisions. Thus, the CBCh self-imposed a cap on 20% of outstanding bank bond issuance for the size of its bank bond purchases. The purchases so far are close to that limit.

Finally, the assessment has been that current forward guidance, coupled with the stimulative effect of the credit-easing policies and other policies on the fiscal side (see below), has been successful enough in providing a sizeable and credible macroeconomic stimulus that inflation expectations remain on target and have not fallen.

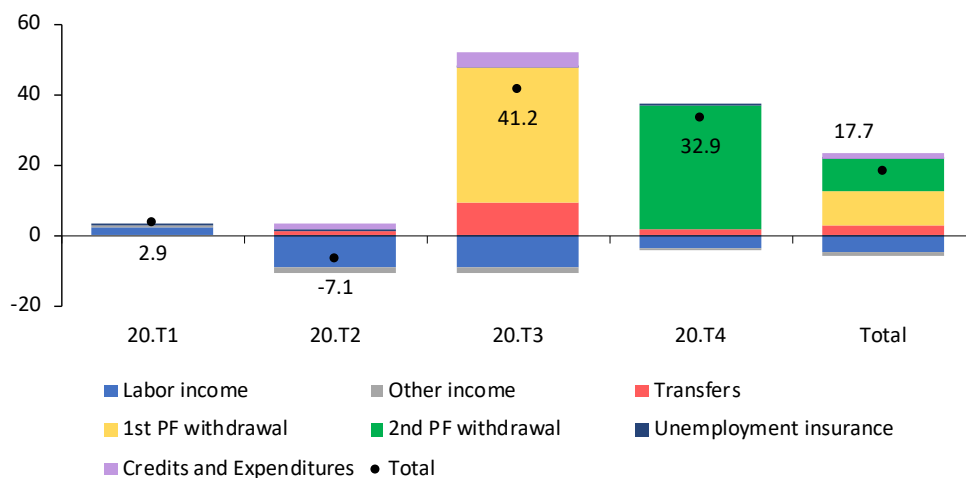
5 THE ROLE OF OTHER POLICIES

The Covid-19 pandemic had very significant adverse effects on households' incomes. Available data suggest that the autonomous income of households – i.e. income from work and other sources, not including transfers or other liquidity measures – fell by 5.7% in 2020, with the greatest contraction taking place during the second and third quarters and a smaller reduction in the fourth. The fall in income was relatively greater for the lowest income groups. Policymakers deployed various support measures to cushion these effects and improve households' consumption possibilities, including fiscal aid programmes and the early withdrawal of pension savings.

The evolution over time of the measures shows that their effect was concentrated in the second half of 2020. Fiscal transfers, important from a historical perspective, only partially compensated for the drop in labour income early on, coming fully online in the third quarter, and were significantly targeted to lower-income households. Legislative

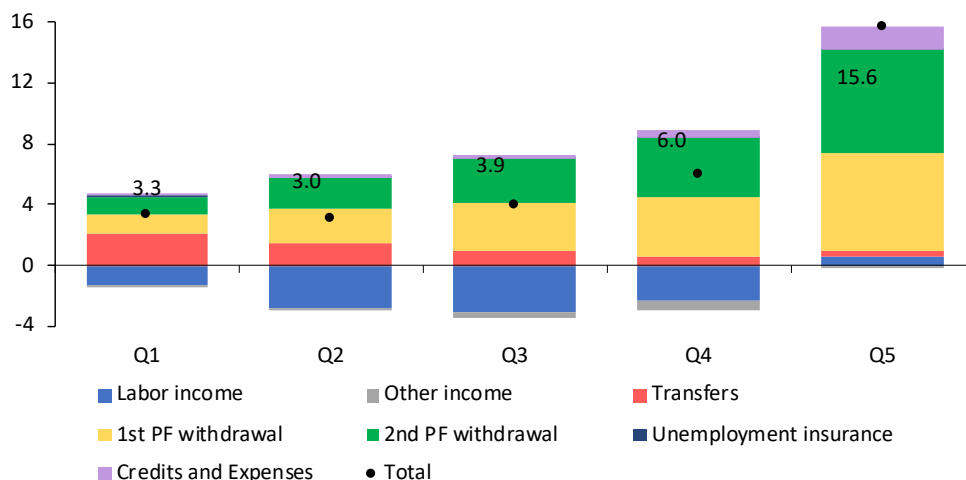
changes were approved, and hotly debated, that allowed for two withdrawals of pension savings, each up to 10% of assets in individual portfolios, with a maximum and a minimum cap. These were not targeted and, as shown, were accessed mainly by higher-income households. The impact on consumption of durables has been significant, but the effect on GDP more muted (Figure 7).

FIGURE 7A EFFECT OF SUPPORT MEASURES ON HOUSEHOLD INCOME, 2020 (ANNUAL CHANGE, %)



Source: Central Bank of Chile based on Barrero et al. (2020).

FIGURE 7B CHANGE IN INCOME AND ADDITIONAL LIQUIDITY, 2020 (US\$ BILLIONS)



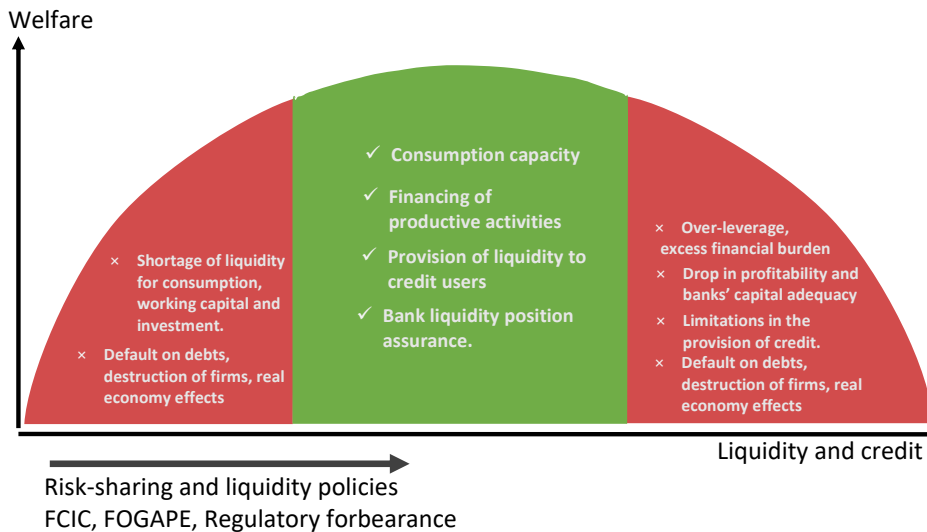
Source: Central Bank of Chile based on Barrero et al. (2020).

The central bank has not considered it pertinent to intervene in the foreign exchange market to provide liquidity, except in periods of acute stress. This is because the Covid crisis, in a non-dollarised economy such as Chile, has created the need for local currency support due to the cash flow crunch for firms (in particular, SMEs) and households. By the same rationale, the crisis did not slow down the reform agenda in foreign exchange regulation aimed at fostering the internationalisation of the peso and easing the remaining hurdles to cross-border flows in local currency.

6 CONCLUDING REMARKS

An important challenge for the CBCh has been to tailor the adequate magnitude of its support measures. With too little support, policies might not be able to avoid severe liquidity crunches for firms and households, generating inefficient defaults and closures. Too much support, on the other hand, could lead to unsustainable leverage, debt overhang, excessive risk-taking, and future financial vulnerabilities (Figure 8).

FIGURE 8 A STYLISTED VIEW OF OPTIMAL POLICY OVER THE CREDIT CYCLE



The assessment of the cash flow needs from the real sector has benefited from research and statistical analysis, which allowed merging firm-level data including performance measures (sales), firm decisions (employment, investment) and access to funding. These data show that the shock facing Chilean businesses was very large and heterogeneous across sectors, with plummeting sales and a significant increase in firms reporting zero sales. Electronic invoice data show that over the first months of the Covid-19 crisis, there was a sharp reduction in sales. On average, sales fell by 13.6% in real annual terms between March and July of 2020. This compares with an increase of 10.5% between January 2014

(when electronic invoice data became available) and September 2019 (the month before the start of the social unrest). Access to rich, real-time and broad-based data proved remarkably useful to inform policymakers about the magnitude of the shock early on, and has been key to informing the design and the timely evaluation of different measures.

These types of quantitative exercises require a close collaboration between institutions, statistical areas, and research teams. However, from a broader perspective of policymaking, a conceptual framing of the limits of policies is needed. The Covid crisis materialised as a very large increase in the need for liquid holdings and credit demand. Therefore, from a narrow monetary policy perspective, an obvious limit to policy accommodation is the credibility of the monetary and inflation targeting frameworks. Jurisdictions with credible inflation targets, anchored inflation expectations, and less-dollarised financial systems have permitted more aggressive easing by central banks.

Beyond monetary policy, the crisis has posed significant political economy challenges in several economies, as it affected households and firms in disparate and heterogeneous ways and also had health and social distancing dimensions. Tackling the risk-sharing and distributional implications of policy design has been a political and legislative challenge everywhere, determining the speed, breadth, and magnitude of support policies across countries.

Against this backdrop, the recovery process is likely to continue presenting these tensions. For autonomous central banks, enhancing transparency in the communication of the rationale for, and limits of, policy design aimed at achieving statutory goals will continue to be paramount.

REFERENCES

Albagli, E, A Fernández and F Huneus (2021), “Firms’s margins of adjustment in the wake of COVID: Microevidence from Chile”, presented at the Central Bank of Chile workshop “Covid-19: Economic Implications and Policy Lessons”.

Alfaro, L, O Becerra and M Eslava (2020), “EMEs and Covid-19: shutting down in a world of informal and tiny firms”, NBER Working Paper 27360.

Arellano, C, Y Bai and G Mihalache (2020), “Deadly Debt Crises: COVID-19 in Emerging Markets”, NBER Working Paper 27275.

Barrero, B, M Kirchner, C Pérez N and A Sansone (2020), *Estimación del impacto del Covid-19 en los ingresos de hogares, medidas de apoyo y efectos en el consumo*, Monetary Policy Report, December, Central Bank of Chile.

Central Bank of Chile (2020), *Monetary Policy Report*, December.

García, P (2021), “The Monetary and Policy Responses to the Covid-19 crisis: The Case of Chile”, Economic Policy Paper 69, Central Bank of Chile.

Huneeus, F, M Larrain, S Schmukler and M Vera (2021), “Which Firms Select into Government Programs: Credit and Labor Protection during COVID-19”, mimeo, Central Bank of Chile.

Leyva, G and C Urrutia (2021), “Informal Labor Markets in Times of Pandemic: Evidence for Latin America and Policy Options”, presented at the Central Bank of Chile workshop “Covid-19: Economic Implications and Policy Lessons”.

ABOUT THE AUTHOR

Pablo García Silva is a Board Member of the Central Bank of Chile since January 2014.

Before being appointed Board Member, between 2010 and 2014 he served as Executive and Alternate Director, Southern Cone, of the International Monetary Fund (IMF), where he chaired the Ethics Committee and was also member of the Internal Evaluation Committee of the Board. From 1999 to 2010, Mr. García held different positions at the Central Bank of Chile, including Chief Economist, Director of the Research Division and Director of the Financial Policy Division. He worked as a researcher at the Economic Research Corporation for Latin America (CIEPLAN) from 1991 to 1994.

Mr. García graduated as Commercial Engineer in 1992 and earned in 1993 an MA in Economic Sciences, both from the Pontifical Catholic University of Chile. In 1999 he graduated as Ph.D. in Economics from the Massachusetts Institute of Technology (MIT).

Pablo García regularly teaches Macroeconomics, Economic Policy, and Latin American Economics at the University of Chile, the Adolfo Ibáñez University, and Notre Dame University. He has written extensively on monetary policy, as well as financial and international economics.

ANNEX: MAIN MEASURES ADOPTED

Objective	Entity	Area	Measure	Potential impact	Date
Facilitate access to credit	CBCh	People and small businesses	Conditional Financing for Increased Loans (FCIC1).	Increase credit and decrease the CAR.	March, 2020
			Program extension (FCIC2).		June, 2020
	Finance Ministry	People and small businesses	Credit line for working capital with state guarantee (FOGAP E) up to 3 months of sales.	Mitigate credit risk of firms.	April 28, 2020
			Reduce deductible for FOGAP E guarantee and increase maximum financing for firms with sales under 1,000 UF.		June, 2020
	CMF		Use of mortgage collateral to back loans to SMEs.	Mitigate credit risk of firms.	May, 2020
			Adjustments in the treatments of good received.	Reduce provisions.	March, 2020
For loan amounts guaranteed by the Treasury of Chile, CORFO, and FOGAP E, reduce de credit risk weight from 100% to 10% for the purpose of RWAs, replacing the legal provision that allowed a share of these guarantees to be considered as part of voluntary provisions that make up regulatory capital.			Reduce capital requirements.	August, 2020	
		Relaxation of timeline for implementing Basel III.	Postpone start of new capital standards.	March, 2020	
Banco Estado	People and small businesses	Capital increase in order to increase lending.	Increase capital loans. Ambiguous effect on CAR.	March, 2020	
Liquidity provision		Commercial banks	Inclusion of corporate bonds as collateral.	Increase access to liquidity.	April, 2020
			Extension of foreign currency sale program.		March, 2020
			Longer maturities for peso and dollar liquidity programs.	Reduce regulatory requirements.	April, 2020
			Extension of the temporary suspension (90 days) of maturity mismatch requirements.		
			Extension of the relaxation of the LCR limit.		
	CBCh		Activation of Liquidity Credit Line (LCL).	Reduce short-term funding costs.	March, 2020
			Special asset purchase program (BCP, BCU, bank bonds).	Reduce long-term funding costs.	June, 2020
			Check Clearing House regulations incorporated a special protocol to implement actions in contingency situations.	Mitigate liquidity risk.	July, 2020
			Special cash purchase/forward sale program (CCVP) for bank instruments. Effective only for rollovers.	Reduce long-term funding costs.	September, 2020
		SOMA participants	Purchase of time deposits. Effective only through October.	Reduce funding costs.	July, 2020
Finance Ministry	People and businesses	Tax deferral or suspension.	Mitigate credit risk of firms.	September, 2020	
		Microbusiness protection fund.		March, 2020	
		Extension of the labor income protection program.	Mitigate household credit risk.	September, 2020	

(*) Green: new measures; Black: ongoing measures.

Source: Central Bank of Chile, based on data from the CMF, and the Ministry of Finance.

CHAPTER 12

The People's Bank of China adhered to normal monetary policy and enhanced support to the real economy to offset the impact of Covid-19

Sun Guofeng

People's Bank of China

Facing the unprecedented challenges brought on by Covid-19, the People's Bank of China (PBC) undertook comprehensive monetary policy measures to counter the impact of the pandemic. The sound monetary policy was more flexible and appropriate. The PBC managed the intensity, pace and focus of adjustments flexibly, based on the progress of pandemic containment and production resumption at different stages. The policies have achieved their intended effects; China's economy has returned to pre-Covid-19 growth. Some lessons can be learned from how monetary policies were able to support the real economy and offset the impact of Covid-19.

THE PBC MAINTAINED NORMAL MONETARY POLICY AND ACTIVELY WORKED TO COPE WITH THE IMPACT OF COVID-19

After the 2020 Spring Festival, the PBC paid close attention to the evolution of Covid-19, and put forward that due to limited flow of personnel and materials, enterprises could not effectively organise production and sales. It was important to start from the supply side to promote recovery of production, which in turn drove the economic and social recovery cycle. Based on this rationale, the PBC introduced timely and specific measures to support economic recovery. It introduced RMB 1.8 trillion in inclusive central bank lending and central bank discounts, and created two instruments of direct support. Broadly speaking, monetary policy has remained normal.

a) Policy support measures

The PBC adhered to cross-cyclical design. In terms of aggregates, it released RMB 1.75 trillion in long-term liquidity through three cuts to the reserve requirement ratio (RRR), and RMB 1.46 trillion in medium-term liquidity through the Medium-term Lending Facility (MLF). By comprehensively applying central bank lending and central bank discounts, as well as creating monetary policy instruments that directly supported the real economy, the PBC launched more than RMB 9 trillion in monetary support

measures to effectively deal with the impact of Covid-19. From February to April 2020, loan supply was relatively strong. Since May, with the accelerated recovery of China's economy, the PBC returned monetary policy to its normal rhythm. More attention has been paid to its flexibility and moderation.

In terms of prices (interest rates, etc.), the PBC pre-emptively guided the MLF and Open Market Operation (OMO) down by 30 basis points, which simultaneously down-drove the one-year loan prime rate (LPR). In accordance with the principle of commercial sustainability, the PBC guided financial institutions to actively concede profits to the real economy by reducing interest rates and fees and delaying loan repayments. In 2020, the comprehensive financing cost of enterprises dropped significantly. In December 2020, the enterprise loan interest rate was 4.16%, a year-on-year decrease of 0.51 percentage points, and the lowest level since 2015. The target of RMB 1.5 trillion of the financial sector conceding profits to the real economy was successfully achieved in 2020.

The PBC innovated monetary policies, supporting enterprises and employment accurately and directly. Three rounds of central bank lending and central bank discount policies were rolled out in a multi-level and multi-tiered approach. Policy responded in an orderly fashion to Covid-19 containment, as well as the needs of economic and social development in China. In response to the outbreak, a first round of special central bank lending of RMB 300 billion was launched on 31 January 2020 to facilitate issuing loans to 7,597 enterprises, which supported the production and transportation of medical and basic supplies. The weighted average interest rate was 2.49%. When Covid-19 was essentially contained, in order to support enterprises to resume work and production in an orderly manner, a second round of central bank lending and central bank discounts of RMB 500 billion was launched on 26 February 2020. The interest rate for central bank loans to agriculture and small businesses was reduced by 0.25 percentage points to 2.5%. The urgent problems of debt repayment, capital turnover, and expanding financing faced by enterprises were effectively solved. At the stage of accelerated resumption of production, the PBC rolled out a third round of RMB 1 trillion of inclusive central bank lending and central bank discounts, on 20 April 2020. Loans were provided to 1.58 million enterprises involved in agriculture and external trade, which were seriously affected by Covid-19, with a weighted average interest rate of 4.48%. Up to now, the total amount of RMB 1.8 trillion of central bank lending and central bank discounts has been successfully completed, which has strongly supported Covid-19 containment, the resumption of business and production activities, and economic development.

The PBC created two new instruments to support loans to inclusive finance and small and medium-sized enterprises on 1 June 2020. The first was a Support Facility for Inclusive Micro and Small Businesses (MSBs) loan extension. With this facility, the PBC provided incentive funds of RMB 40 billion through interest rate swaps. These funds encouraged local commercial banks to issue loans to inclusive finance firms and MSBs. Loans totalling around RMB 3.7 trillion were supported. The other instrument is the Support Facility for Unsecured Inclusive MSB Loans. The PBC provided RMB

400 billion in central bank lending with no interest to local banks to provide favourable funding equivalent to 40% of new unsecured loans to inclusive finance firms and MSBs. The facility supported RMB 1 trillion of such loans. The PBC insisted on the principle of market-aimed reform and paid attention to the prevention of moral hazard. By the end of 2020, principal and interest repayments on loans of RMB 7.3 trillion had been deferred by banking financial institutions across the country. The instrument in support of deferred repayments on inclusive MSB loans operated on a monthly basis, providing a cumulative RMB 8.7 billion in incentive funds to locally incorporated banks and supporting the deferral of the principal on a total of RMB 873.7 billion inclusive MSB loans from June to December. In 2020, a total of RMB 3.9 trillion in inclusive unsecured loans for MSBs were provided by banking financial institutions, RMB 1.6 trillion more than in 2019. Among these, from March to November, local banks with a central bank rating from 1 to 5 issued a total of RMB 1.3 trillion in inclusive small and micro credit loans, RMB 593.7 billion more than in the same period in 2019.

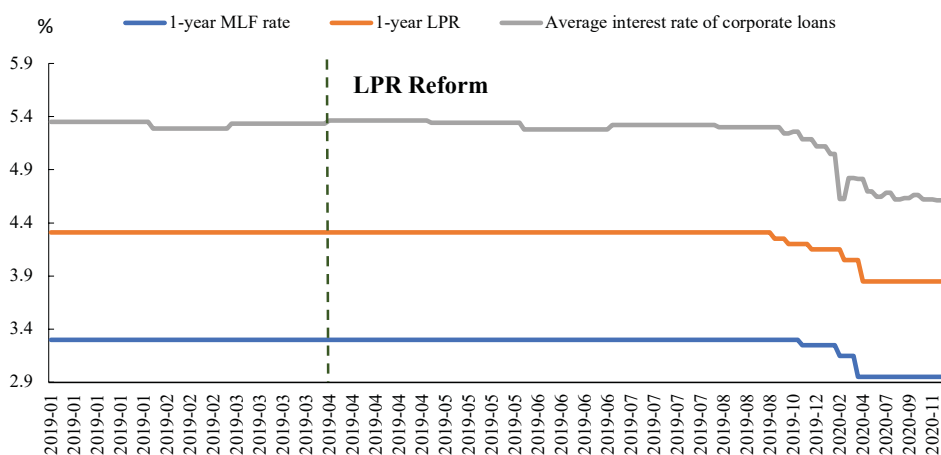
The structural monetary policy tool system has been continuously improved and has become an integral part of China's monetary policy framework. During Covid-19, the strength of structural monetary policy tools was elevated, and their accuracy continues to improve. They played a vital role in promoting the optimisation of the credit structure and in protecting the main market participants. The financing of MSBs has increased in volume, decreased in price, and expanded in scope. By the end of 2020, the balance of inclusive small and micro loans had increased by 30.3% year-on-year, 7.2 percentage points more than in 2019. The average interest rate for newly issued inclusive MSB loans in November 2020 was 5.03%, 0.85 percentage points lower than in December 2019. At the end of November 2020, inclusive MSB loans supported 32.28 million MSBs, a year-on-year increase of 19.4%. At the end of 2020, the outstanding balance of medium- and long-term loans to the manufacturing sector had grown by 35.2% year-on-year, and the growth rate had increased for 14 consecutive months.

b) Reform measures

With the LPR as the starting point, the PBC further promoted a market-oriented reform of interest rates. The central bank started conversion of stock loans on using the floating rate loans pricing benchmark on 1 March, as scheduled, and promoted the reform according to the principles of marketisation and legalisation. This was successfully completed at the end of August 2020, with the conversion rate reaching 92.4%. The PBC actively promoted the use of the LPR, resolutely broke the implicit lower limit on loan interest rates, and urged banks to embed LPR in the Funds Transfer Pricing (FTP) system. The PBC will give full play to the role of LPR reform in promoting the market-oriented reform of deposit interest rates, strengthen the self-regulatory mechanism for market rate pricing, restrain non-standard deposit products, strengthen the internet joint deposit management, and maintain the stability of banks' liability costs. In addition, communication to the public was intensified through the publication of the China

Monetary Policy Report, news briefings and other platforms, including the PBC's website, its official WeChat account and the micro-blog Weibo. The transmission efficiency of the interest rate has been significantly improved. By December 2020, the loan interest rate of enterprises had decreased by 0.51 percentage points on a year-on-year basis, which was more than the 0.3 percentage point drop in the one-year LPR in the same period.

FIGURE 1 THE MLF, LPR RATE AND AVERAGE INTEREST RATE OF CORPORATE LOANS



Source: The People's Bank of China.

The PBC endeavoured to advance the reform of the RMB exchange rate formation mechanism in a more market-based direction. It improved the RMB exchange rate formation mechanism and enhanced the exchange rate flexibility. In October 2020, all RMB quotation banks gradually took the initiative to fade out the use of the 'counter-cyclical factor' in the RMB central parity model. The PBC strengthened macroprudential management of the foreign exchange market, reduced the foreign exchange risk reserve ratio for forward foreign exchange sales business from 20% to 0% in October, and reduced the macroprudential adjustment parameters of cross-border financing from 1.25 to 1 in December to guide financial institutions in adjusting the structure of their foreign exchange assets and liabilities in a market-oriented way. At the same time, through the *China Monetary Policy Report*, official news and other channels, the PBC declared its policy intention, thus guiding and stabilising market expectations. As mentioned above, the flexibility of the RMB exchange rate has been enhanced. The currency remained basically stable at a reasonable and balanced level. It has played the role of an automatic stabiliser of the macro economy and the balance of payments and has improved the autonomy of China's monetary policy. By the end of 2020, the exchange rate against the US dollar had appreciated by 6.9% compared with the end of 2019 (although this did not exceed the highest appreciation range in history from 2007 to 2008). The exchange rate index of China Foreign Exchange Trade System (CFETS), which measures the exchange rate of the RMB against a basket of currencies, appreciated 3.8% from the end of 2019.

c) Communication and coordination

The PBC has also taken comprehensive measures to enhance its public communications, creating a good environment for the effective implementation of monetary policy and the smooth operating of the financial markets. First, in the first two working days after the Spring Festival holiday on the 3rd and 4th of February, at the beginning of the height of the Covid-19 outbreak, the PBC injected liquidity of RMB 1.7 trillion through the OMO, which effectively doubled the amount of liquidity in the banking system. This greatly outpaced expectations and took the financial markets by surprise. The injection greatly calmed market sentiments and ensured smooth market functioning. Second, the PBC improved the mechanism of its monetary policy communications. The OMOs were carried out on a daily basis, MLF facilities were carried out on a monthly basis, and relevant operational arrangements were announced in advance. A schedule for the communication of monetary policy has been established. Media briefings on financial statistics data have been held every quarter and every month. Press releases for China's Monetary Policy Report and Monetary Policy Committee meetings have been published to indicate policy signals regularly and mechanically to guide expectations. The PBC issued a press release after the introduction of each policy, and participated in press conferences of the Joint Prevention and Control Mechanism of the State Council and of the State Council Information Office on many occasions. Third, better policy coordination is very important in this special and difficult time. Different economic policies – monetary policy, fiscal policy, macroprudential policy, employment policy and so on – should coordinate well and work together, both domestically and internationally, to fight Covid-19 and to support economic recovery. Since the Covid-19 outbreak, Governor Yi Gang of the PBC has maintained close communication with the leaders of other central banks and international organisations. This has helped in sharing information, understanding the current circumstances, and collaborating to weather the epidemic shock.

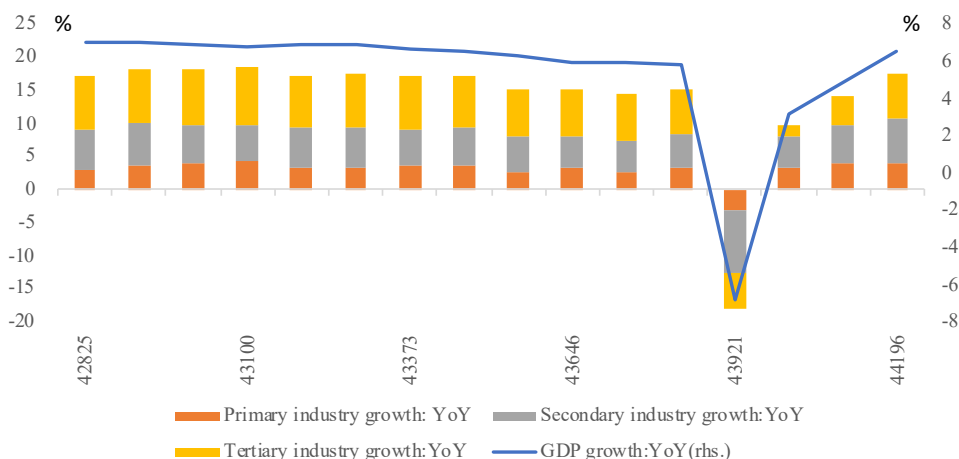
As one example of policy coordination, China announced a plan for increased issuance of government bonds. In 2020, China issued RMB 1 trillion in special government bonds to fight Covid-19, RMB 1 trillion more in general government bonds to supplement increased fiscal deficits, and RMB 1.6 trillion in local government bonds. The combined additional issuance amounted to RMB 3.6 trillion. Considering the issuance of new government bonds and rising liquidity demand before each quarter end, the PBC provided a stable liquidity environment for market functioning and proactive fiscal policy.

In general, further improvements in the effectiveness and accuracy of monetary policy in 2020 have provided strong support for China to take the lead in controlling the pandemic situation, returning to work and production, and achieving positive economic growth.

THE EFFECTS OF THE PBC'S MONETARY POLICY ON CHINA'S ECONOMY AND FINANCIAL MARKETS

In 2020, facing unprecedented challenges brought on by Covid-19, China was the only major economy to achieve positive growth. As China's economy is dominated by the manufacturing industry, rather than services, it recovered faster once Covid-19 was contained. China's nominal GDP was RMB 101.60 trillion in 2020. Its real GDP grew 2.3% compared with last year. There was a V-shaped economic recovery – GDP went down by 6.8% year-on-year in the first quarter of 2020, then up by 3.2% in the second quarter, 4.9% in the third quarter and 6.5% in the fourth quarter. The economic structure also improved. The value added of the tertiary sector was larger than that of primary and secondary industries. More specifically, the value added of primary industry was RMB 7.78 trillion (up by 3.0%); the value added of secondary industry was RMB 38.43 trillion (up by 2.6%); and the value added of tertiary industry was RMB 55.40 trillion (up by 2.1%).

FIGURE 2 GROWTH OF GDP AND THREE INDUSTRIES



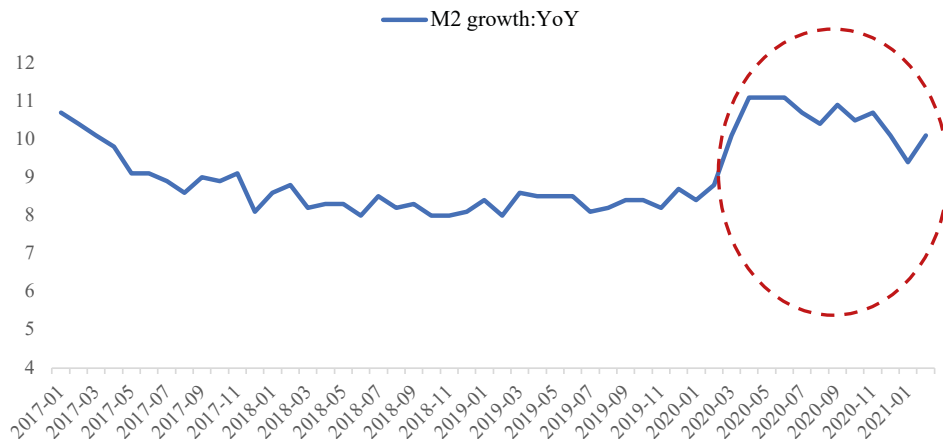
Source: National Bureau of China (NBS)

In 2020, China's consumer price index (CPI) inflation increased while its producer price index (PPI) inflation dropped. Overall, the CPI went up by 2.5% over the previous year (by 2.3% in urban areas and by 3.0% in rural areas). The core CPI, excluding the price of food and energy, went up by 0.8%. China's PPI fell by 1.8%.

Capital markets exhibited strong resilience, and effectively supported firm financing. In 2020, net issuance of corporate bonds and government bonds was RMB 12.2 trillion and 13.4 trillion, respectively. These were historical high levels and 2.5 and 5 trillion more than last year, respectively.

The RMB exchange rate maintained flexibility and moved in both directions, well within a reasonable range. The average exchange rate against the US dollar for the whole year was 6.90 yuan, the same level as 2019. On the whole, the exchange rate was in line with China's foreign trade and the fundamentals of its economy.

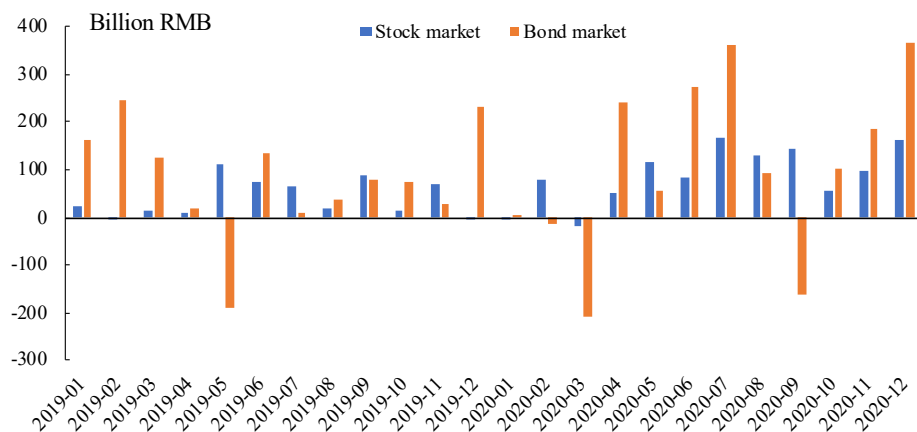
FIGURE 3 GROWTH OF M2



Source: PBC

In 2020, we observed increased appetite of foreign investors for RMB assets. In March, when the global US dollar funding market tightened, capital flows into China's bond market were roughly balanced with outflows. After that, we observed strong purchases of China's government bonds and domestic stocks by foreign investors. In 2020, foreign investors increased holdings of domestic stocks and bonds by about US\$254.7 billion, an increase of 73% over last year.

FIGURE 4 NET INCREMENT OF FOREIGN INVESTORS' HOLDINGS OF CHINA'S STOCKS AND BONDS



Source: Wind

The PBC's normal monetary policy achieved these great results at a reasonable cost.

First, the interest rate level has been kept within a reasonable range; there has been no zero or negative interest rate.

Second, the balance sheet of the central bank is basically stable. The normal market-oriented functioning of the banking system's money creation has been fully exerted. The central bank's balance sheet has not been greatly expanded to 'print money'. In 2020, the balance sheet of the PBC expanded by only about 3%, while those of the Federal Reserve, the European Central Bank, and the Bank of Japan expanded by 77%, 50%, and 24%, respectively.

The PBC's balance sheet mainly reflects the relationship between central bank and commercial banks. From 2002 to 2014, foreign exchange inflows increased rapidly, becoming the main source of liquidity in the banking system and expanding the PBC's balance sheet. The PBC raised the RRR to lock down redundant excess reserves. Since 2015, the size of the PBC's balance sheet has been stable, while the structure has been gradually adjusted. As foreign exchange inflows decreased, the PBC turned to central bank lending tools, such as MLF, to provide long-term liquidity to the banking system. Meanwhile, it cut the RRR to further meet the liquidity deficit.

Since 2018, the total assets of the PBC have stabilised at around RMB 36 trillion. There are some seasonal characteristics – the scale of assets goes up near the year-end and the Chinese Spring Festival, mainly due to the increasing liquidity demand and cash demand.

Theoretically, the RRR cut itself has not changed the size of the central bank's balance sheet. After the RRR cut, the overall reserves volume was unchanged as well as the size of the balance sheet. What has changed is the reserve structure. To be more specific, required reserves have changed into excess reserves. In this way, more liquidity is provided to commercial banks.

Meanwhile, the RRR cut increased commercial banks' ability to boost the size of their balance sheets. When the RRR is lowered, commercial banks have more excess reserves to support new loans. **Newly issued loans will create deposits**, which are on commercial banks' liability side. New deposits mean that some excess reserves should turn into required reserves at the required reserve ratio. After a period of credit expansion, the system arrives at a new equilibrium, in which commercial banks' balance sheets are greatly enlarged and excess reserves released by the RRR cut all turn into required reserves.

In recent years, while the PBC's balance sheet remained stable, those of commercial banks kept expanding at a normal speed. By the end of 2020, the total assets of commercial banks had reached RMB 319 trillion, 30 trillion more than in 2019.

Third, the growth rate of money and credit is far lower than during the response to the Global Financial Crisis. In 2020, new RMB loans totalled about RMB 20 trillion, an increase of about RMB 3 trillion compared with 2019, and the growth rate of M2 and aggregate financing to the real economy (AFRE) increased by about 2 percentage points and 3 percentage points, respectively. However, new loans in 2009 were twice as high as those in 2008, the growth rate of M2 increased by 10 percentage points, and the growth rate of social financing increased by 14 percentage points.

Growth of loans and AFRE has remained strong. Since 2018, the total assets of the PBC have stabilised at around RMB 36 trillion. At the same time, the PBC has aimed to enhance banks' ability to increase loans to support the real economy. By the end of 2020, year-on-year growth rates of RMB loans and AFRE were 12.8% and 13.3%, respectively, which is 0.5 and 3.2 percentage points higher than the end of 2019.

The credit structure has also improved. Loans to manufacturing firms and to micro, small, and medium-sized enterprises (MSMEs) continued to deliver benefits, and targeted financial support for key areas of the real economy increased. In 2020, the outstanding balance of medium- and long-term loans to the manufacturing sector surged by 35.2%, 20.3 percentage points higher than in the previous year. The growth rate has risen for 14 consecutive months. Inclusive loans to small and micro companies grew by 30.3%, 7.2 percentage points higher than in the previous year. Additionally, the financial policy of curbing housing prices gradually took effect, and growth in the outstanding balance of loans to the real estate sector fell for 29 consecutive months.

Fourth, the growth rate of the macro leverage ratio is lower than that of other major economies, and also lower than when dealing with the Global Financial Crisis. At the end of the second quarter of 2020, China's macro leverage ratio had increased by 21.2 percentage points compared with 2019, which is lower than the growth rates for the United States (32.5 percentage points), Japan (26.6) and the euro area (22.5) in the same period. China's macro leverage ratio increased by 23.5 percentage points in 2020, significantly less than the 35.5 percentage point growth in 2009, and the growth rate was converging quarter by quarter.

LESSONS LEARNED IN FIGHTING COVID-19 AND SUPPORTING THE ECONOMY

First, facing elevated market uncertainty, central banks need to keep ahead of the curve, adopt a comprehensive strategy and take decisive actions to calm the market. More-than-needed liquidity should be seen as adequate. During the 2020 Spring Festival, one day before market opening, the PBC announced RMB 1.2 trillion in liquidity injections on the first trading day. This is one of the rare cases of the PBC pre-emptively announcing its OMO operating plan. It injected an additional RMB 0.5 trillion on the second trading day to further calm the market. The central bank effectively made known to all entities

its determination to support the market, and the stock market fell on only one day during that time. By strengthening communication and improving transparency, we reduced market uncertainty and improved the effectiveness of monetary policy.

Second, we should take different policy actions in different phases. The PBC conducted three rounds of targeted central bank lending to achieve different policy targets, in accordance with three phases of containing Covid-19 and economic recovery. In first phase, when Covid-19 broke out in China, targeted policy was set up to support commercial banks to provide loans at preferential rates to more than 7,597 key enterprises that provided medicines and basic daily necessities. This policy avoided the impact of undersupply. In the second phase, when the economy began to recover, the PBC's policy supported nearly 600,000 enterprises. In the third phase, when Covid-19 was contained and economy recovery was accelerating, the PBC's policy supported commercial banks to increase loans to enterprises. This helps China's economy return to its potential growth rate.

Third, we should strengthen cross-cyclical design and keep aggregates moderate. The PBC rolled out a variety of monetary policies to cope with Covid-19, and at the same time also considered the policy exit mechanism. Since May, China's monetary policy has returned to normal and more attention has been paid to its flexibility. An important part of the modern monetary policy framework is basically matching the growth rate of money supply and social financing with the economic growth rate, which helps stabilise monetary aggregates across the economic cycle. In terms of operations, nominal economic growth, potential output and economic growth targets are considered comprehensively. Affected by Covid-19, China's economic growth in 2020 deviated significantly from its potential output. The growth rate of money supply and of social financing refers to the nominal economic growth rate, reflecting potential output. At the end of December 2020, the growth rate of M2 was 10.1%, and the growth rate of social financing was 13.3%, which has supported the economy in returning to potential output.

Fourth, we should rely on market mechanisms to increase the efficiency of policy transmission. Policy actions by central banks should not interfere with normal market functioning, and should not distort the economic behaviour of market entities. The PBC adheres to the principle of market-aimed reform and pays attention to the prevention of moral hazard. Commercial banks are incentivised by the PBC's structural monetary policy tools to increase loans. The PBC will not choose clients for banks to loan to, and will not take risks. These are left to commercial banks and financial markets.

Fifth, the PBC strives to enhance the capability of banks to support the real economy. Given that the banking industry dominates China's financial system, banks are key to effective monetary policy transmission and maintaining credit flows. The PBC endeavours to alleviate the capital, liquidity, and interest rate constraints of banks. First, it injected long-term liquidity through a targeted RRR reduction and a central bank lending facility.

Second, since 2019, banks have issued perpetual bonds of more than RMB 800 billion, effectively replenishing their tier one capital. Third, the PBC pushed forward interest rate reform to improve the efficiency of policy transmission.

OUTLOOK FOR MONETARY POLICY IN 2021

In 2021, the global economy will tend to recover. Coupled with macro policy support and the effect of a low base, the economic indicators of major economies may continue to improve. As for China, economic development in 2021 is certain. The endogenous power of the economy has been enhanced. Micro entities have sufficient capital supply, and the macroeconomic situation is generally improving. On 7 April 2021, the International Monetary Fund predicted that the global economy will grow by 6% in 2021, and that China's economy will grow by 8.4%.

However, the monetary policies of emerging market economies (EMEs) may face challenges in 2021. The main risks that EMEs face are increasing US treasury yields and the resulting appreciation of the US dollar. The large scale of quantitative easing in 2020 and potential fiscal stimulus have elevated inflation expectations. This will affect the prices of various assets and lead to global re-pricing risk. Capital flows might reverse. EMEs should prepare for an impact induced by increasing US treasury yields.

As next steps, the PBC will continue to implement flexible, accurate, reasonable and moderate orientation of prudent monetary policy. The first step is to be flexible and keep aggregates reasonable and moderate. We should use a variety of monetary policy tools comprehensively, and keep M2 and AFRE growth in line with nominal GDP growth. The second step is to improve the financial system to effectively support the real economy. We will improve the structural monetary policy tool system, accurately drip irrigation, and allocate more financial resources to the key areas and weak links of economic and social development. The third step is to improve the formation and transmission mechanism of the market-oriented interest rate. The key work here is to further smooth the transmission of the LPR to the loan interest rate, consolidate the results of the decline of the real loan interest rate, and promote the steady decline of comprehensive financing costs for enterprises. The fourth step is to deepen the market-oriented reform of the exchange rate, and achieve the balance between the internal equilibrium and the external equilibrium.

ABOUT THE AUTHOR

Dr. Sun Guofeng is Director-General of the Monetary Policy Department of the People's Bank of China. He was a visiting professor at the Economics Department of Princeton University, and a visiting fellow at Bank for International Settlements and Stanford University. He is also a part-time professor and PhD supervisor at Tsinghua University. He is the author of *Reforms in China's Monetary Policy* and *Financial Reforms in Modern China*, and editor of *The Handbook of China's Financial System*.

ANNEX: THE PBC'S POLICY ACTIONS IN RESPONSE TO COVID-19

Date	Policy action
6 January 2020	The PBC lowered the RRR for financial institutions (excluding finance companies, financial leasing companies, and auto finance companies) by 0.5 percentage points, releasing over RMB 800 billion in long-term funds.
31 January 2020	The PBC launched RMB 300 billion in special central bank lending to support production of medical and basic supplies.
3 February 2020	The PBC injected RMB 1.2 trillion through OMO repo operations to stabilise financial markets. The OMO 7-day repo rate decreased 10 bps from 2.5% to 2.4%.
4 February 2020	The PBC injected RMB 0.5 trillion through OMO repo operations to stabilise financial market.
17 February 2020	The PBC conducted MLF operations with an interest rate of 3.15%, 10 basis points down from the previous operation.
20 February 2020	The one-year and above-five-year LPR were 4.05% and 4.75%, 10 basis points and 5 basis points down from the previous quotation, respectively.
26 February 2020	The PBC launched RMB 500 billion in special central bank lending and central bank discounts to support resumption of work and production.
26 February 2020	The PBC cut the interest rate on central bank loans in support of the agricultural sector and small enterprises by 25 basis points to 2.5%.
March 2020 to August 2020	The PBC completed the floating rate loans pricing benchmark conversion of stock loans, with the conversion rate reaching 92.4%.

Date	Policy action
16 March 2020	The PBC implemented a targeted RRR cut for inclusive finance. Based on the assessment on the issuance of loans for inclusive finance in 2019, it granted a preferential RRR cut of 0.5-1.5 percentage points to eligible institutions, and released approximately RMB 400 billion in net long-term funds. Moreover, joint-stock commercial banks that received a 0.5 percentage point RRR cut according to this assessment will enjoy an additional RRR cut of 1 percentage point. The cut was expected to release long-term funds of about RMB 150 billion, all of which are required to be used to issue inclusive finance loans.
30 March 2020	The OMO 7-day repo rate decreased 20 bps to 2.2%.
10 April 2020	The PBC cut the interest rates of the Standing Lending Facility (SLF), lowering the overnight, seven-day and one-month interest rates to 3.05%, 3.20% and 3.55%, respectively, all decreases of 30 basis points from the previous quotation.
15 April 2020	The PBC conducted MLF operations with an interest rate of 2.95%, 20 basis points down from the previous operation.
15 April and 15 May 2020	The RRR cut of 1 percentage point for rural commercial banks, rural cooperative banks, village banks, and city commercial banks operating solely within provincial-level administrative regions was carried out in two phases, with a cut of 0.5 percentage points each on 15 April and 15 May 15. About RMB 400 billion in long-term funds were freed up by the cuts.
20 April 2020	The PBC launched RMB 1 trillion of inclusive central bank lending and central bank discounts to support economic recovery.
20 April 2020	The one-year and above-five-year LPR were 3.85% and 4.65%, respectively, 20 basis points and 10 basis points down from the previous quotation.
1 June 2020	The PBC created the Support Facility for Inclusive Micro and Small Businesses (MSBs) Loan Extension, providing incentive funds of RMB 40 billion through interest rate swaps. Loans supported were around RMB 3.7 trillion.
1 June 2020	The PBC created the Support Facility for Unsecured Inclusive MSB Loans, providing RMB 400 billion in central bank lending with no interest to local banks to provide favourable funding equivalent to 40% of new unsecured loan to inclusive finance and MSBs. The facility supported RMB 1 trillion of such loans.
29 June 2020	The PBC decided to cut the interest rates on central bank lending and central bank discounts starting from 1 July 2020. The interest rate on central bank lending in support of agriculture and MSBs was cut by 0.25 percentage points and the central bank discount rate was cut by 0.25 percentage points.
12 October 2020	The PBC reduced the foreign exchange risk reserve ratio of forward foreign exchange sales from 20% to 0%.

Date	Policy action
27 October 2020	All RMB quotation banks took the initiative to fade out the use of the 'counter cyclical factor' in the RMB central parity model.
11 December 2020	The PBC reduced the macro-prudential adjustment parameters for financial institutions' cross-border financing from 1.25 to 1.
31 December 2020	The Support Facility for Inclusive MSBs Loan Extension and Support Facility for Unsecured Inclusive MSB Loans were extended until 31 March 2021.
24 March 2021	The Support Facility for Inclusive MSBs Loan Extension and Support Facility for Unsecured Inclusive MSB Loans were extended until the end of 2021.

CHAPTER 13

The response of the Reserve Bank of India to Covid-19: Do whatever it takes

227

Rakesh Mohan¹

Centre for Social and Economic Progress

BACKDROP

India responded to Covid-19 as soon as it was becoming clear that a pandemic was in the offing. Although there were only 500 confirmed cases at that time, the government imposed a sudden nationwide total lockdown on 25 March 2020. This lasted until end of May 2020 and was then lifted in phases subsequently. In the words of the government's official Economic Survey, "India focused on saving lives and livelihoods by its willingness to take short-term pain for long-term gain" (Government of India 2021: 1). The short-term pain was indeed palpable, with GDP estimated to have contracted by 24.4 % year-on-year in Q1 FY 2021,² followed by a further contraction of 7.3 % year-on-year in Q2, and a faint recovery of 0.4 % year-on-year in Q3. The full FY 2020–21 GDP is estimated to have contracted by 8.0%, which has come on top of an ongoing economic slowdown over the previous eight quarters or so. The current expectation of most forecasters is that the Indian economy will stage a robust recovery and grow by 10–12.5% in FY 22.³ Thus, overall, the economic cost of Covid-19 will be around two years of GDP growth and as yet indeterminate losses in employment and livelihoods.

In terms of lives, India has fared much better than the West, with about 120 deaths per million and fewer than 9,000 cases per million (as of 31 March 2021),⁴ compared with the United States recording around 1,700 deaths per million and over 90,000 cases per million. However, the Indian record is a not as good as that of much of Asia, and similar but slightly worse than the rest of South Asia. Given the low levels of income in the country and high density of settlements, both urban and rural, India has been lucky to have not experienced a worse disease outcome. Looking to the future, possessing the highest vaccine production capacity in the world, India is potentially well-placed to implement a

1 I would like to express my deepest appreciation for the excellent research support received from Divya Srinivasan and Abhishek Kumar, Research Analyst and Associate Fellow, respectively, at CSEP; helpful comments from Viral Acharya, Jaimini Bhagwati, Shyamala Gopinath, Anoop Singh and Usha Thorat; and the Reserve Bank of India for vetting my factual narrative. The views contained here are personal.

2 The Indian fiscal year runs from April to March. So, FY 21 means 1 April 2020 to 31 March 2021, and Q1 FY 2021 runs from April to June 2020.

3 Current forecasts for Indian GDP growth in FY 2022 include RBI at 10.5% and the IMF at 12.5%.

4 There is currently an explosive surge in progress since late March 2021, the health and economic implications of which cannot be assessed at present.

successful mass vaccination programme by the end of 2021, but the speed of vaccinations has faltered. So this will need more urgent and faster systematic implementation in light of the new wave now being experienced by India (in mid-April 2021).

The policy response to the economic impact of both the pandemic and the consequent lockdown was the usual mix of fiscal, monetary and financial measures, but relatively light on fiscal measures, which were largely focused on cushioning the impact on the poor and on tiny and small businesses. “This included direct food transfers to the poor and vulnerable, livelihood programmes, guarantees and liquidity enhancing measures” (Government of India 2021: 20). The additional fiscal stimulus was in the range of only about 2–2.5 % of GDP, which is at the lower end of the spectrum for emerging market economies (EMEs). The government of India has been very mindful of the need to preserve its fiscal firepower in view of its already extended fiscal situation,⁵ and the uncertainty surrounding the length of time that the pandemic will affect the world and India. Consequently, much of the burden of policy measures has rested on active cooperation between the government and the Reserve Bank of India (RBI) in ensuring that the economy and the financial system remained stable and liquid. They have largely succeeded in achieving this broad objective, at least in the short term: financial markets have exhibited significant stability, with no lack of liquidity, inflation has been range bound between 4.1 % and 7.6 % over the year,⁶ and financial institutions have remained viable as a consequence of the various policy measures taken.

This chapter focuses on the specific measures taken by the Reserve Bank in this context.

At the beginning of the pandemic, starting in March 2020, as lockdowns spread across the world, the expectations of the RBI, along with most other leading central banks, were of a severe economic dislocation, the possible freezing of financial markets, widespread suffering of households and businesses, with their inevitable impact on financial intermediaries, along with a severe downturn in global trade. Judging from previous experience, emerging markets, including India, also faced the spectre of capital outflow with its associated impact on asset price volatility and financial stability. As the initial severe lockdowns had their expected economic impact, including in India, the negative economic expectations were reinforced by indices such as the global manufacturing Purchasing Managers Index (PMI) exhibiting its lowest level in April 2020 since 2008–09, along with the services PMI being at its lowest level ever, and global trade was falling substantially.

5 Because of reduced revenues due to the economic slowdown, and some legacy issues, the fiscal deficit for FY 21 is estimated to be about 9.5% of GDP, the total government debt-to-GDP ratio is likely to reach 90% in FY22

6 CPI inflation in February 2021 was 5.03%.

With the experience of the 2008–09 North Atlantic Financial Crisis (NAFC) still relatively fresh in the minds of macro managers, fiscal and monetary authorities, along with financial regulators, were ready to use all instruments at their command to avert the then expected financial and economic disaster. Central banks, in particular, were well equipped to pull out all the stops.

In India, with the possibility of a relatively constrained fiscal response, the RBI had to do much of the heavy lifting. The RBI is a full-service central bank as the monetary authority, lead financial system regulator and supervisor of financial intermediaries, banker to and debt manager of the central and state governments, currency issuer and manager, and regulator and operator of the payment and settlement system. Its policy actions since February 2020 have therefore encompassed all these areas and have had the benefit of being coordinated. It has carried out more policy actions than any other EME central banks (Cantu et al. 2021)

A perusal of the various documents issued by the RBI since February 2020 provides the broad objectives that it desired to achieve through its policy measures. Its multiple objectives included:

- Minimise the adverse macroeconomic impact of the Covid pandemic and the associated lockdowns
- Enhance effective transmission of monetary policy
 - Ensure smooth and seamless transmission of monetary policy impulses
- Preserve financial stability
 - Prevent financial markets from freezing up.
 - Maintain orderly functioning of financial markets and financial institutions
 - Provision of adequate system level as well as targeted liquidity
 - Keep the financial system and financial markets sound, liquid and smoothly functioning so that finance keeps flowing to all stakeholders
 - Ensure normal functioning of financial intermediaries to facilitate of flow funds at affordable rates and rekindle investment impulses
 - Sustain bank credit flows on easy terms
 - Ensure access to finance for all, especially the sectors which were hit the hardest
- Ease financial strains on both households and businesses
- Facilitate trade, both exports and imports, through easy availability of credit and payment services
- Facilitate the completion of the enhanced market borrowing programmes of both the central and state governments in a non-disruptive manner

- Ensure an orderly evolution of the yield curve
- Ensure the orderly and smooth functioning of the payment and settlement systems, at both retail and wholesale levels
- Maintain smooth and regular flow of currency across the country

In accordance with these objectives, in cooperation with the government, the RBI implemented a plethora of policy changes throughout the year starting in March 2020. Some were at a general, macro level, while some others were at a micro level and detailed. An almost full chronology is provided in the table in the Annex. They can be grouped into four broad categories, though some were not easy to classify:

- Monetary policy
- Liquidity management and special credit facilities
- Fiscal cooperation
- Regulatory measures

MONETARY POLICY

The Reserve Bank is a ‘flexible inflation targetter’⁷ and its operational monetary policy signalling rate is the repo rate – the rate at which it lends to commercial banks on a collateralised basis through its Liquidity Adjustment Facility (LAF). The operating target of monetary policy is the weighted average call rate (WACR), which reflects the rate at which transactions are conducted in the unsecured segment of the overnight money market. The LAF attempts to maintain an interest-rate corridor between the interest rate of the Marginal Standing Facility (MSF) as the upper bound, and the fixed reverse repo rate as the lower bound, with the policy repo rate in between (RBI 2021c: 122). The fixed rate reverse repo and MSF of overnight tenor are conducted every day between 9am and midnight. The 14-day variable rate repo/reverse repo is conducted on a fortnightly basis based on assessment of liquidity conditions by the Reserve Bank.⁸ The objective of the liquidity operations is to align the WACR with the repo rate. Prior to Covid, the LAF interest-rate corridor was kept relatively narrow at 50 basis points.

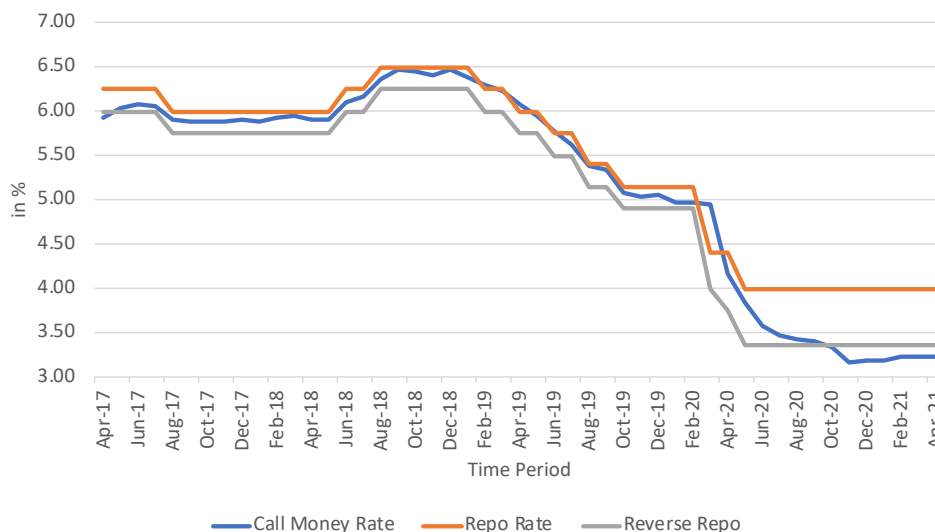
The RBI acted very quickly in March 2020 and convened the Monetary Policy Committee (MPC) on March 24, a week earlier than its previously scheduled date. The decisions taken were intended to “(a) mitigate the negative effects of the virus; (b) the revive growth; and above all, (c) preserve financial stability” (RBI 2020a). Starting from the aggressive policy actions taken in this meeting, the RBI reduced the policy repo rate from 5.15% to 4.0% over the year. This was done in two stages: first a reduction of 75 basis points to

7 Its inflation target of 4 +/- 2%, set in 2016, has just been reconfirmed for the next five years.

8 See <https://rbidocs.rbi.org.in/rdocs/PressRelease/PDFs/PR1900EC7E5351A39741EEB4FE8B9203BEA6DB.PDF>

4.40% on 27 March 2020 and then another 40 basis points on 22 May 2020. The rate has been stable since then. Correspondingly, the MSF rate has been reduced from 5.40% to 4.25%, and the reverse repo rate somewhat more by 155 basis points from 4.9% to 3.35%. Thus, the monetary policy interest-rate corridor has been expanded significantly from 50 basis points to 90 basis points (Figure 1). Although inflation was higher than the RBI's tolerance band through much of 2020, it is now back within the policy range.

FIGURE 1 REPO, REVERSE REPO AND CALL MONEY RATE (NOMINAL)



Source: Reserve Bank of India.

Other policy actions were taken simultaneously in March 2020 to provide banks increased access to funds and aid their lending. The cash reserve ratio (CRR) for banks was reduced by 100 basis points from 4% to 3% of their net demand and time liabilities (NDTL) for a period of one year. This had the effect of providing additional primary liquidity of Rs 1.37 trillion⁹ to the banking system. Some other technical accommodations were also given to banks in their daily compliance with the CRR regulation. CRR exemptions were also provided aimed at incentivising lending to micro, small and medium-sized enterprises. In addition, banks were also allowed a potential increase in the limits available for accessing the MSF from 2% to 3% of the NDTL. This provided a further increase in banks' potential access to funds by another Rs 1.37 trillion. However, this facility has seen very little usage in view of the other liquidity actions taken by the RBI. In view of the abundant liquidity available in the system, it has now been announced that the CRR will be restored to its earlier value of 4% by end-May 2021.

⁹ About 0.67% of GDP.

Although the RBI is some distance away from nominal negative rates, its real policy rates were in negative territory through much of 2020 and beyond because of elevated inflation levels. This has been transmitted to both bank deposit and lending rates, and the money market target rates (WACR) as well. The real yield on risk-free ten-year government securities were also negative through much of 2020. Thus, in view of the relatively higher inflation rates prevalent in India (and other EMEs), while the central bank has not had to resort to nominal negative policy rates, its highly accommodative monetary policy has indeed resulted in significant real negative rates (Table 1 and Figure 2).

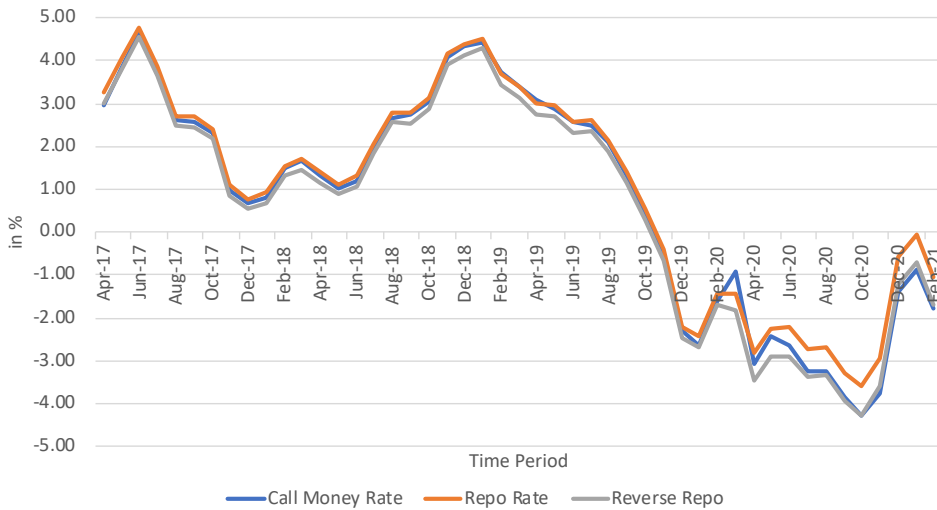
Going forward, the RBI will need to constantly assess the consequences of such a prolonged period of real negative interest rates and high liquidity provision on inflation and financial stability; on household savings;¹⁰ and possible bursting of asset bubbles. It should be of interest to compare the magnitude of real policy rates between advanced and emerging market economies, and their consequences as they unfold.

TABLE 1 REAL RATES

Time period	Call money rate	Repo rate	Reverse repo
March 2020	-0.90	-1.44	-1.84
April 2020	-3.07	-2.82	-3.47
May 2020	-2.43	-2.27	-2.92
June 2020	-2.66	-2.23	-2.88
July 2020	-3.25	-2.73	-3.38
August 2020	-3.26	-2.69	-3.34
September 2020	-3.86	-3.27	-3.92
October 2020	-4.27	-3.61	-4.26
November 2020	-3.78	-2.93	-3.58
December 2020	-1.41	-0.59	-1.24
January 2021	-0.88	-0.06	-0.71
February 2021	-1.80	-1.03	-1.68

Source: Reserve Bank of India; Ministry of Statistics and Programme Implementation, Government of India.

¹⁰ A similar episode of negative real rates took place in the early 2010s after the NAFC, consequent to an extended highly accommodative monetary policy stance. There was some evidence of flight to safety of household assets like gold (Mohan and Ray 2019)

FIGURE 2 REPO, REVERSE REPO AND CALL MONEY RATE (REAL)

Source: Reserve Bank of India; Ministry of Statistics and Programme Implementation, Government of India.

Forward guidance

For the first time, perhaps, the RBI engaged in some degree of forward guidance. “FG gained prominence in the Reserve Bank’s communication strategy to support the accommodative stances of the Monetary Policy Committee (MPC)” (RBI 2021d: 48). The nature of this forward guidance was repeated assurance to financial markets that the policy stance would remain accommodative until the revival of growth. As announced by the MPC in October 2020, it would “continue with the accommodative stance as long as necessary – at least during the current financial year and into the next financial year – to revive growth on a durable basis and mitigate the impact of Covid-19 on the economy while ensuring that inflation remains within the target going forward” (RBI 2021d: 48). The accommodative stance continued in the recent MPC meeting held in April 2021, with a stronger assurance that the RBI will do “whatever it takes”¹¹ in the wake of continued Covid threats. Repeated assurances have also been given that the RBI would maintain comfortable liquidity conditions, financial stability and an orderly yield curve. These statements have been interpreted by the RBI as constituting “explicit time contingent and state contingent forward guidance” (RBI 2021d: 51), even though they are perhaps not as explicit as the forward guidance employed by some other advanced economy central banks. Since real GDP growth is expected to recover to 10%+ levels in FY 2022, this forward guidance can be interpreted to be somewhat ambiguous.

11 To quote Mario Draghi, then Governor of the European Central Bank, in 2012.

LIQUIDITY MANAGEMENT AND SPECIAL CREDIT FACILITIES

As already mentioned, the RBI performs active liquidity management on a daily basis through the operations of the LAF. These operations were enhanced significantly through the introduction of long-term repo operations (LTROs) in February/March 2020 for one year and three-year tenors “to support monetary transmission and augment credit flows to productive sectors” (RBI 2020e: 69), similar to the operations by the European Central Bank (ECB). Since the rate was linked to the policy repo rate, these resources were available to banks at a rate lower than prevailing market rates as well as banks’ own deposit costs. This was designed to facilitate monetary policy transmission and to support credit offtake. LTRO auctions were held amounting to Rs 1.25 trillion. As market rates went down over time, almost all the funds were returned to the RBI by September 2020.

Further liquidity facilities were provided through two targeted long-term repo operations (TLTRO 1.0 and 2.0) of up to three years tenor at the floating rate linked to the policy repo rate. Lending through this facility was targeted for banks to invest in specified instruments such as investment-grade corporate bonds, commercial paper (CP) and the like. The introduction of this facility was a response to some tightening observed in financial conditions consequent to sell-off pressures in financial markets arising from the initial reactions to the outbreak of the pandemic. TLTRO facilities were therefore designed to address the “sharp spikes in risk premium on corporate bonds, CPs and debentures dried up trading activity resulting in market liquidity” (RBI 2021d: 47). Subsequent TLTROs were introduced to provide relief to the small and mid-sized corporates, non-bank financial institutions (NBFCs), and micro finance institutions (MFIs). Later, in October 2020, the TLTRO facility was made on an on-tap basis up to end-March 2021; and in December 2020 an additional 26 sectors adjudged to be “stressed sectors” were made eligible to receive funds under the scheme. Investments made by banks under this facility can be classified as held to maturity (HTM) even above the 25% of total investment permitted to be included in the HTM portfolio. Four TLTRO auctions were held initially amounting to just over Rs 1 trillion. TLTRO 2.0 attracted lukewarm demand in view of ample liquidity in the system. TLTRO 2.0 has been extended till September 2021 at a recently held MPC meeting in April 2021.

India has a number of sectoral development finance institutions: the Small Industries Development Bank of India (SIDBI), the National Housing Bank (NHB), the National Bank for Agriculture and Rural Development (NABARD) and the Export-Import Bank (EXIM Bank). Special refinancing facilities were provided at the policy repo rate to each of these institutions, amounting to an aggregate of Rs 750 billion, to relieve their liquidity stress and to enable them to extend credit at low rates in their respective sectors. Less than half of the potential liquidity provided has been used. This facility has been extended for the financial year 2021-22 with Rs 500 billion.

The overall objective therefore was to make sure that no part of the financial system faced any difficulty in accessing funds during this whole Covid period. The total potential liquidity injection amounted to Rs 13.6 trillion, about 6.9% of GDP, by 31 March 2021 (Table 2). The liquidity operations were a combination of market liquidity provisions supplemented by targeted ones in terms of both specified instruments and sectors.

**TABLE 2 MONETARY AND LIQUIDITY MEASURES, 6 FEBRUARY 2020 TO 31 2021
(RS BILLION, AS ON 31 MARCH 2021)**

Measures	Announcement
LTRO	2,000
Variable rate repo	2,250
SLF for PDs	72
CRR cut	1,370
MSF (dip by 1% in SLR)	1,370
TLTRO	1,000
TLTRO (2.0)	500
Net OMO purchase	1,500
Special liquidity facility for mutual funds	500
Refinance to NABARD, SIDBI, NHB and EXIM bank	750
Special liquidity scheme for NBFCs	300
56-day term repo	1,000
On Tap TLTRO	1,000
Total	13,612
As proportion of 2019-20 GDP (%)	6.7
As proportion of 2020-21 GDP (%)	6.9

Source: RBI (2021e: Table IV.7).

FISCAL COOPERATION

Ways and Means Advances

As their banker, the Reserve Bank of India provides a facility of Ways and Means Advances (WMA) to the government of India and to state governments to help them tide over temporary mismatches in the cash flow of their receipts and payments. These advances are usually given at 2% above the repo rate, up to a specified limit announced every six months, and are repayable in each case in 90 days. In other words, this is an overdraft facility available to both the central and state governments.

In view of the nationwide lockdown imposed in late March 2020 and the consequent disruption in financial markets and in tax receipts, the WMA limit for the central government was increased from the initial Rs 1.2 trillion to Rs 2 trillion for the first half of FY 2021. The corresponding limit for the first half of FY 2020 had been Rs 750 billion. Similarly, the limit for state governments was increased in stages by 60%, and extended to the second half of FY 2021. These measures did much to reduce the cash flow problems than being faced by both the central and state governments.

Asset purchases

The Reserve Bank is the debt manager for both the central and state governments. In principle, it acts as the front and back office of a conventional government debt office. The Ministry of Finance itself is formally the middle office. Since 2003, after the enactment of the Fiscal Responsibility and Budget Management Act, the RBI is no longer allowed by law to participate in the government securities primary market, except in very exceptional circumstances. Although some countries did choose this route as a consequence of Covid-induced fiscal stresses, and despite many pressures, the government of India and the RBI eschewed that route for financing the much-increased borrowing requirements of the government.

The RBI did, however, maintain an active programme of asset purchases of government securities in the secondary market through its open market operations (OMOs) amounting to about Rs 3.13 trillion, about 1.5% of GDP, through FY 2021. This accounted for about 30% of the central government's total net market borrowings of about Rs 10.5 trillion. The RBI does not normally conduct OMOs in state government securities (known as State Development Loans, or SDLs). Because of the increased risk perception due to Covid, yields on SDLs started rising, so the RBI has also been conducting special OMOs in SDLs in order to help the state government market borrowing programmes and to constrain market SDL yields from rising.

In April 2021, the RBI put in place a secondary market government security (G-sec) acquisition programme (GSAP) with an upfront commitment to a specific amount of open market purchases of government securities to enable a stable and orderly evolution of the yield curve amidst comfortable liquidity conditions.

Operation Twist

Starting in December 2019, and continuing to the present, the RBI has been conducting special OMOs – through Operation Twist (OT) – involving the simultaneous purchasing of long-term government securities and selling corresponding short-term securities of similar amounts in a liquidity neutral fashion. “These operations were aimed at compressing the term premium and reducing the steepness of the yield curve. Moderation in the long-term risk free (g-sec) rates, in turn, gets reflected in other financial market instruments that are priced off the g-sec rate, thereby improving monetary transmission” (RBI 2021d: 48). The RBI conducted 19 such operations, usually of Rs 100 billion each, during 2020-21, amounting to a total of just over Rs 2 trillion.

As a consequence of all these measures, and as the debt manager of the government, the RBI succeeded in managing the highest ever level of the government’s market borrowing programme. The weighted average borrowing cost for the central government, at 5.79% during 2020-21, was at a 16-year low. The comparable cost in the previous year was 6.84%. The weighted average maturity of the stock of public debt is also at its highest level ever (RBI 2020i).

Corporate bond spreads also narrowed considerably across the maturity spectrum and rating categories and have reached pre-Covid levels. Moreover, in view of the lower rates, corporate bond issuance in the April to January period of FY 2021 exceeded that in the previous year’s comparable period by about 20%. The reduction in rates was across the board in all financial markets, including other instruments such as commercial paper (Table 3). This could give rise to financial stability issues if there is an increase in bond defaults consequent to lower-than-expected economic recovery.

TABLE 3 RATED OF INTEREST ON COMMERCIAL PAPER AND CERTIFICATES OF DEPOSIT

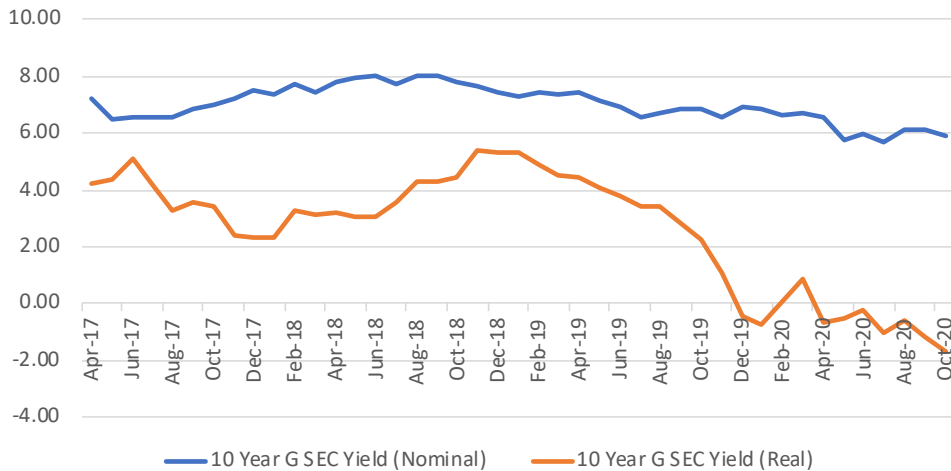
Month end (second fortnight)	Rate of interest (CP*)	Rate of interest (CD**)
February 2021	3.10 - 12.60	3.34 - 5.12
December 2020	3.06 - 12.73	3.09 - 4.44
September 2020	3.32 - 11.86	3.51 - 5.75
June 2020	3.18 - 13.35	3.92 - 5.08
March 2020	4.88 - 12.39	4.96 - 8.80
December 2019	4.99 - 13.18	4.97 - 5.84
September 2019	5.30 - 11.99	5.30 - 6.76

Notes: * Commercial paper (CP) is an unsecured money market instrument issued in the form of a promissory note. It can be issued by corporates, primary dealers (PDs) and the All-India Financial Institutions (FIs). **Certificate of deposit (CD) is a negotiable money market instrument and issued in dematerialised form or as a Usance Promissory Note against funds deposited at a bank or other eligible financial institution for a specified time period.

Source: Reserve Bank of India.

Overall, although the RBI avoided direct funding of the substantially enhanced fiscal deficits of both the central and state governments, its multiple actions – encompassing much increased Ways and Means Advances, large asset purchases, a sizeable Operation Twist programme and occasional devolvement of bond auctions on primary dealers – amounted to substantial cooperation with the fiscal authorities. Its objective was clearly to successfully manage the government’s very large market borrowing programme while keeping borrowing costs low. The yield on ten-year g-secs was 6.5% at the beginning of FY 2021 and ended the fiscal year (March 2021) at 6.18%, averaging just under 6% (see Figure 3). The moderation of interest rates across the whole yield curve, including in particular the long-term rates, reduced the cost of borrowing for the government substantially. As long-term g-sec yields softened, interest rates across the whole “spectrum of instruments and issuer categories which rekindled market activity in and restored normalcy while maintaining financial stability” (RBI 2021d: 50). This operation was made much easier thanks to the RBI’s role as debt manager of the government.

FIGURE 3 10-YEAR G-SEC YIELD (REAL AND NOMINAL)



Source: Reserve Bank of India.

The possibility of increasing inflation in both India and the rest of the world, leading to potential hardening of US Treasury yields, will clearly challenge the RBI’s yield control objectives in the coming months.

REGULATORY MEASURES

Along with the extensive measures enacted by the RBI in terms of monetary policy, liquidity management and fiscal cooperation, a host of measures were put in place to help in the continued smooth functioning of financial intermediaries including banks and NBFCs. On the one hand, these policy measures were aimed at protecting and helping

borrowers in this time of economic and financial stress brought on by the pandemic and the consequent lockdowns. On the other hand, measures were also put in place to provide regulatory relief to financial intermediaries in terms of their access to liquidity and regulatory forbearance to protect their balance sheets. The overall aim was to keep credit flowing despite all the disruptions being experienced by the economy and financial markets.

“These policy actions, which in the initial phase of pandemic, were geared towards restoring normal functioning and mitigating stress, are now getting increasingly oriented towards supporting the recovery and preserving the solvency of businesses and households” (RBI 2021a: 1). The emphasis now is to help the financial system to return to some degree of normalcy, while aiding the most affected sectors to recover from the crisis.

Credit enhancement measures

Taking cognisance of the total and sudden lockdown imposed by the government, right at the outset the RBI put in place a moratorium on the payment of instalments on all term loans that were standard prior to Covid. Similarly, payment of interest on working capital facilities was also deferred – banks were allowed to turn these into term loans. These measures were designed to provide temporary relief to borrowers facing liquidity stress due to the pandemic and also to provide banks with flexibility to deal with such borrowers.

Initially these moratoriums were allowed for a period of three months and then extended until 31 August 2020. The cessation of the moratoriums was stayed by the Supreme Court of India in early September. That stay has now been lifted in late March 2021, so the non-payment of instalments between September 2020 and now is in a state of limbo. Whereas regulatory forbearance was given to the banks for non-payment of instalments by borrowers during the moratorium, they will now¹² have to be classified as per the income recognition and asset classification norms after 31 August. The Supreme Court has also prohibited the charging of interest on interest during the moratorium period.

A number of measures were also enacted to promote the extension of credit to micro, small and medium-sized enterprises (MSMEs). These include the extension of credit guarantees from the government to financial intermediaries for MSME lending,¹³ some regulatory forbearance on classification of MSME stressed assets, and macroprudential regulations related to risk rates on MSME loans. There has been a general perception that MSMEs have been hit harder by the Covid crisis; hence these special measures to keep credit flowing to them.

¹² <https://rbi.org.in/Scripts/NotificationUser.aspx?Id=12071&Mode=0>

¹³ The Government of India introduced the “Emergency Credit Line Guarantee Scheme” for lending to MSMEs with a guarantee limit of Rs 3 trillion. The scheme has undergone a number of changes over the year. The tenor of loans under this scheme can be extended for up to six years, including a moratorium period of two years. Starting with the original intention of enhancing credit to MSMEs, it has now been extended to cover the hospitality, travel and tourism, leisure and sporting sectors, in addition to the 26 stressed sectors (RBI 2020h: 12) identified as eligible for resolution.

In order to protect banks from excessive concentration of risk in exposure to a group of connected borrowers, the RBI places limits on such exposures. The existing limit was 25% of the eligible capital base of the bank. In view of difficulties faced by some large borrowers in accessing credit, this limit was raised to 30% to facilitate the flow of resources to such large corporate entities.

In order to preserve bank capital to encourage credit flow banks have been prohibited from giving any dividend payouts to the shareholders for FY 2020.

Regulatory forbearance

It was expected that the unfolding of the pandemic and its associated economic impact on the overall macroeconomic environment would have a negative effect on the asset quality, capital adequacy and profitability of financial intermediaries, including banks. The unprecedented injection of abundant liquidity into the system, accompanied by the lowering of interest rates, helped to cushion financial institutions from the worst impact of the crisis. It was also felt necessary to buttress these systemic measures with corresponding regulatory forbearance. The general principle governing the new forbearance measures was that they would apply only to new stressed assets arising on account of Covid, and not to the legacy nonperforming assets (NPAs).

The Indian banking system has been under significant stress due to the accumulation of a large amount of NPAs over the last decade or so. Various policies and measures have been put in place for the resolution of these stressed assets over the last five years or so. The RBI had introduced a principle-based resolution framework for addressing borrower defaults under a normal scenario in June 2019 (RBI 2019). The outbreak of the pandemic led to new fears over the appearance of a significant financial stress among a number of borrowers who otherwise had a good track record, which could then lead to difficulties in their long-term viability. This could give rise to new financial stability risks.

The RBI felt that it would be helpful to allow lenders to implement resolution plans for such borrowers while keeping their loans in standard classification. It has therefore introduced a new resolution framework for such borrowers, “with the intent to facilitate revival of real sector activities and mitigate the impact on the ultimate borrowers” (RBI 2020d: 3). Covid-related stressed sectors were then identified for eligibility for the scheme by an RBI committee (RBI 2020h). These resolution plans are also available to NBFCs in addition to commercial banks. Forbearance was also extended through another scheme for restructuring needed by MSME borrowers facing stress the pandemic.

The RBI mandates a ‘statutory liquidity ratio’ (SLR) by which commercial banks have to hold a minimum percentage of their assets in government securities. This ratio is currently mandated to be 18% of their NDTL. Securities held under this mandate are given ‘held-to-maturity’ (HTM) status, protecting banks from losses that could occur from market-to-market valuation arising from increases in yields. In view of the enhanced government market borrowing programme, the HTM ratio has been increased from 19.5% of NDTL to

22%, allowing banks to hold a larger proportion of government securities while shielding them from potential losses leading to financial stability risks. In fact, however, banks' portfolios of government securities now amount to about 30% of NDTL, thereby placing them under significant risk in the event of g-sec market yields rising.

The implementation of the last tranche of 0.625% of the capital conservation buffer (CCB) was scheduled to take effect from April 2020. This was first deferred to April 2021, and then again to October 2021, in order to "aid in the recovery process" from Covid-induced stress (RBI 2021b).

Macroprudential measures

In the couple of years preceding the 2008-09 North Atlantic Financial Crisis (NAFC), the RBI had undertaken various macroprudential measures in the interest of preserving financial stability. Having had this positive experience, the RBI has once again put in place a few macroprudential measures in the light of Covid.

As prescribed by existing Basel III guidelines, differential risk capital charges are applied to debt instruments held by banks directly that are lower than those applied to similar instruments held indirectly through mutual funds, since the latter are seen to have an equity element. These risk capital charges have now been harmonised with the expectation of helping the operation of the bond market (RBI 2020f).

Under Basel guidelines, a bank's aggregate exposures included in retail portfolios attract a lower risk weight of 75% as long as individual exposures do not exceed a specified relatively low limit. This measure helps in reducing the cost of credit to individuals and small businesses. As part of the overall strategy of enhancing the flow of credit to MSMEs, the RBI has increased the limit of aggregate exposures from Rs 500 million to Rs 750 million (RBI 2020f).

In previous episodes of potential financial instability, macroprudential measures were used to curb housing finance through the counter-cyclical increase in risk weights applicable to certain categories of housing loans. In the current situation, however, retail investment in housing has suffered a downturn following lockdowns and other Covid-induced economic disruptions. The RBI has therefore tweaked risk weights to make them more favourable for certain categories of housing loans depending on specified loan-to-value (LTV) ratios, in order to ease bank lending for housing (RBI 2020f).

CONCLUSION

The Bank for International Settlements (BIS) has compiled a database on central banks' monetary responses to Covid-19. A perusal of the database shows that the RBI has used most of the tools and measures listed except for the purchase of private sector assets (Cantu et al. 2021: Table 1). Policy intervention by the RBI can be evaluated as relatively comprehensive and broad-based. Just like other central banks, its skills in managing such

a crisis had been honed during the NAFC in 2008-09. While, unlike advanced economy central banks, it did not have to practice unconventional monetary policy at that time, it was able to learn from their practices in designing its policy response this time.

There was one dog that didn't bark. Unlike during previous episodes of global economic and financial instability, there were no capital outflows except in the few weeks after the onset of the pandemic; in fact, the opposite took place. India has received enhanced capital flows in FY 2021, leading to significant accretion of its forex reserves through the RBI's normal forex interventions. There were no new capital flow measures. However, going forward, in the event of hardening yields of advanced economy treasury bonds, particularly those of the United States, there could be a potential outflow necessitating substantial forex intervention à la 2008 and associated domestic liquidity measures. One positive feature of the enhanced forex flows in FY 2021 is that debt inflows, which are usually the first to exit, were negligible.

Overall, the RBI, in cooperation with the Government of India, has succeeded in achieving its overall objective of keeping financial intermediaries, financial markets and the financial system as a whole sound, liquid, and functioning smoothly. It has maintained financial stability despite initial conditions of the Indian financial intermediaries being stressed as a consequence of legacy problems. But very significant challenges remain as this crisis unfolds further, both in India and the rest of the world.

It has also protected households as well as small and large businesses from experiencing acute financial stress. It remains, however, to be seen what will happen as the impact of the lifting of the debt moratoriums starts to be felt. It is estimated that around 40% of the amount of all outstanding loans took advantage of the moratorium. MSMEs, in particular, were outliers with almost 70% of their debt being in this category, while only about a third of corporate loans used the moratorium.

Transmission of the highly accommodative monetary policy, and the corresponding liquidity management, put in place right at the beginning of the Covid crisis has been largely successful. Interest rates have fallen across the board and g-sec yields are at almost record lows, as are private sector bond market and commercial paper yields and bank deposit and lending rates (Table 4). However, the RBI's liquidity injection has been so large that there has been an almost consistent systemic liquidity surplus of about Rs 6 trillion (about 3% of GDP) that needs to be absorbed on a daily basis. This liquidity injection is a consequence of the RBI's aggregate domestic asset purchases of around Rs 3 trillion and forex interventions amounting to over Rs 5 trillion over FY 2021. Therefore, the target money market interest rate (WACR) has been somewhat below the reverse repo rate.

TABLE 4 CALL MONEY, SAVINGS, DEPOSITS AND LENDING RATES

Year	Call money rate	Nominal rates		CPI (inflation)#	Real Rates		
		Savings*	Term deposit above five years*		Savings*	Term deposit above five years*	
2020-21	3.65	2.85	5.38	6.6	-3.75	-1.23	0.3
2019-20	5.43	3.25	6.05	4.8	-1.55	1.25	2.88
2018-19	6.27	3.75	6.75	3.4	0.35	3.35	4.9
2017-18	5.94	3.75	6.5	3.6	0.15	2.9	4.28

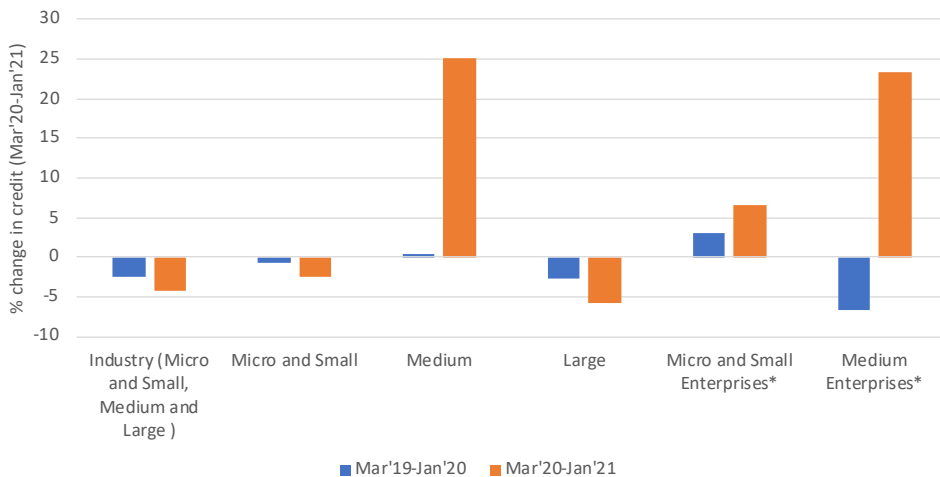
Notes: * Median of interval/range. #CPI (Combined) inflation (average).

Source: Reserve Bank of India; Government of India (2021: 50).

The key positive consequence of this monetary policy and liquidity management strategy has been the successful completion of the much-enhanced government borrowing programme at low cost. Corporate bond markets have also responded because of the low cost and corporate bond issuance was in fact higher than in the previous year.

However, despite all the measures implemented to promote the flow of credit to all segments of the market, credit growth has continued to be sluggish except for a significant increase to the SMSE sector (Figure 4). Hence there is a mismatch between the performance of the real sector and financial markets. This could potentially lead to enhanced stresses experienced by both lenders and borrowers, leading to potential financial instability. As estimated by the RBI's Financial Stability Report (RBI 2021a), the gross NPA ratio of Indian commercial banks could increase to 13.5% by September 2021, as compared with 7.5% in September 2020. Thus, financial stability challenges remain for the Indian financial system and its regulator in the months to come.

FIGURE 4 DEPLOYMENT OF CREDIT (PERCENTAGE CHANGE FROM MARCH 2020 TO JANUARY 2021)



Note: * Priority sector.

Source: Reserve Bank of India.

REFERENCES

Cantú, C, P Cavallino, F De Fiore and J Yetman, (2021), “A Global Database on Central Banks’ Monetary Responses to Covid-19”, BIS Working Paper No 934, Bank for International Settlements.

Government of India (2021), *Economic Survey 2020-21, Volume 1* (www.indiabudget.gov.in/economicsurvey/).

Mohan, R and P Ray (2019), “Indian Monetary Policy in the Time of Inflation Targeting and Demonetization”, *Asian Economic Policy Review* 14: 67-92.

Reserve Bank of India (2019), “Prudential Framework for Resolution of Stressed Assets”.

Reserve Bank of India (2020a), “Governor’s Statement - Seventh Bi-monthly Monetary Policy Statement, 2019-20, 27 March 2020”.

Reserve Bank of India (2020b), *Monetary Policy Report*, April .

Reserve Bank of India (2020c), “Statement on Development and Regulatory Policies”, June.

Reserve Bank of India (2020d), “Statement on Development and Regulatory Policies”, August.

Reserve Bank of India (2020e), *Monetary Policy Report*, October .

Reserve Bank of India (2020f), “Statement on Development and Regulatory Policies”, October.

Reserve Bank of India (2020g), *Annual Report 2019-20*.

Reserve Bank of India (2020h), *Report of the Expert Committee on Resolution Framework for Covid-19 Related Stress*, September.

Reserve Bank of India (2020i), “Governor’s Monetary Policy Statement”, December.

Reserve Bank of India (2020j), “Statement on Development and Regulatory Policies”, December.

Reserve Bank of India (2021a), *Financial Stability Report*, Issue No, 22, January.

Reserve Bank of India (2021b), “Statement on Development and Regulatory Policies”, February.

Reserve Bank of India (2021c), *Report on Currency and Finance*.

Reserve Bank of India (2021d), “Unconventional Monetary Policy in Times of Covid-19”, *RBI Bulletin*, March, pp. 41-56.

Reserve Bank of India (2021e), *Monetary Policy Report*, April.

ABOUT THE AUTHOR

Rakesh Mohan is is President and Distinguished Fellow of the Centre for Social and Economic Progress (CSEP), New Delhi, India, formerly Brookings India.

Dr Rakesh Mohan was most recently Senior Fellow in the Jackson Institute for Global Affairs, Yale University and was earlier Professor in the Practice of International Economics and Finance at the School of Management at Yale University, 2010-12. He was Executive Director on the Board of the International Monetary Fund, Deputy Governor of the Reserve Bank of India, and Chief Economic Adviser to the Ministry of Finance, government of India.

After the Great Financial Crisis, he co-chaired the G20 Working Group “Enhancing Sound Regulation and Strengthening Transparency” (2009), and the CGFS/BIS Working Group on “Capital Flows and Emerging Market Economies” (2009).

He has authored two books on monetary policy: *Monetary Policy in a Globalized Economy: A Practitioner’s View* (2009), and *Growth with Financial Stability: Central Banking in an Emerging Market*.

ANNEX: COVID-19-RELATED MEASURES TAKEN BY RESERVE BANK OF INDIA FROM MARCH 2020 TO MARCH 2021

A. Monetary policy

247

i. Interest rate policy

Mar 27, 2020	Policy repo rate reduced under the Liquidity Adjustment Facility (LAF) by 75 basis points from 5.15% to 4.40%.
Mar 27, 2020	Marginal standing facility (MSF) and Bank Rate reduced by 75 basis points from 5.40% to 4.65%.
Mar 27, 2020	Reverse repo rate reduced the by 90 basis points from 4.90% to 4.0%. Monetary policy interest rate corridor widened from 50 bps to 65 bps. Now, the reverse repo rate would be 40 bps lower than the policy repo rate. The MSF rate would continue to be 25 bps above the policy repo rate.
Apr 17, 2020	Reverse repo rate reduced by 25 basis points from 4.0% to 3.75%. Monetary policy rate corridor widened further from 65 bps to 90 bps. Reverse repo rate now 65 bps lower than the policy repo rate. The MSF rate continues to be 25 bps above the policy repo rate.
May 22, 2020	Repo rate reduced by 40bps from 4.40% to 4.0%.
May 22, 2020	MSF rate and Bank Rate also reduced by 40 bps from 4.65% to 4.25%.
May 22, 2020	Reverse repo rate under the LAF also reduced by 40 bps from 3.75% to 3.35%. Interest rate corridor retained at 90 bps

ii. Other (CRR, etc.)

Mar 27, 2020	The cash reserve ratio (CRR) of all banks reduced by 100 basis points to 3.0% of NDTL for a period of one year; providing additional primary liquidity of Rs 1.37 trillion to the banking system. Additionally, the requirement of minimum daily CRR balance maintenance was reduced from 90% to 80% as a one-time dispensation available up to June 26, 2020. Scheduled commercial banks allowed exemption on incremental credit disbursed between January 31-July 31, 2020 on retail loans for automobiles, residential housing and loans to MSMEs from the maintenance of CRR, to aid in flow of credit.
Mar 27, 2020	Marginal Standing Facility (MSF): increase the limit of 2% to 3% up to June 30, 2020. Banks are allowed to avail of funds under the MSF by dipping into the statutory liquidity ratio (SLR) up to an additional 1% of net demand and time liabilities (NDTL), i.e. cumulatively up to 3% of NDTL.

Feb 05, 2021	<p>Restoration of cash reserve ratio in two phases beginning March 2021</p> <p>Gradual restoration of the CRR decided to be done in two phases in a non-disruptive manner. CRR to be increased from 3.0% to 3.5% of NDTL effective fortnight beginning March 27, 2021 and 4.0% of NDTL effective from fortnight beginning May 22, 2021.</p> <p>To incentivise new credit flow to MSME borrowers, banks permitted to deduct credit up to Rs 2.5 million to 'New MSME borrowers' for calculation of their NDTL for CRR purposes.</p>
Feb 05, 2021	<p>Marginal Standing Facility (MSF) - Extension of Relaxation</p> <p>The increased MSF limit of 3% was extended in phases up to September 30, 2021 providing comfort to banks on their liquidity requirements and also to enable them to meet their Liquidity Coverage ratio (LCR) requirements. This dispensation provides increased access to funds to the extent of Rs 1.37 trillion and qualifies as high-quality liquid assets (HQLA) for the LCR.</p>

B. Liquidity management

Mar 12, 2020	<p>Six-month US dollar sell/buy swaps for US\$2.71 billion to instil liquidity in forex market.</p>
Mar 23, 2020, Mar 26, 2020 and Mar 31, 2020	<p>Auction of variable rate term repos of Rs 1.75 trillion</p>
Mar 27, 2020	<p>Targeted Long-Term Repos Operations (TLTROs): Auctions of TLTROs of up to three years tenor announced up to an aggregate of Rs 1 trillion at a floating rate linked to the policy repo rate.</p> <p>To be deployed by banks in investment grade corporate bonds, commercial paper (CP), and non-convertible debentures (NCDs) in incremental investments in these instruments as on March 27, 2020.</p> <p>Banks are required to acquire up to 50% of their incremental holdings of eligible instruments from primary market issuances and the remaining 50% from the secondary market, including from mutual funds and non-banking finance companies (NBFCs).</p>
Apr 17, 2020	<p>TLTRO 2.0 announced on the same terms for a total amount of up to Rs 500 billion. To be invested by banks in investment grade bonds, CP) and NCDs of NBFCs with at least 50% apportioned to securities/investments issued by micro finance institutions (MFIs) and small and mid-sized NBF Cs.</p>
Apr 27, 2020	<p>Rs 500 billion Special Liquidity Facility for Mutual Funds (SLF-MF): Under the SLF-MF, the RBI shall conduct repo operations of 90 days tenor at the fixed repo rate.</p>

Jul 01, 2020	<p>Special liquidity scheme for NBFCs/housing finance companies (HFCs) To improve the liquidity of NBFCs/HFCs and to address potential systemic risks An SPV set up to manage a stressed asset fund. This fund would issue interest bearing special securities guaranteed by the Govt. of India, to be purchased by RBI only.</p> <p>The SPV will buy the short-term papers from eligible NBFCs/HFCs, who shall utilise the proceeds under this scheme solely to extinguishing existing liabilities.</p>
Oct 09, 2020	On-Tap TLTRO announced with tenors of up to three years for a total amount of up to Rs 1 trillion at a floating rate linked to the policy repo rate.
Dec 04, 2020	<p>On-Tap TLTRO announced on Oct 09, 2020 further extended to include 26 additional sectors.</p> <p>The Government of India launched an Emergency Credit Line Guarantee Scheme (ECLGS 2.0) under which the corpus of Rs 3 trillion of existing ECLGS 1.0 was extended to provide 100% guaranteed collateral free additional credit to entities in 26 stressed sectors identified by the Kamath Committee of RBI, plus health care sector with credit outstanding of above Rs 0.5 billion and up to Rs 5 billion as on 29.2.2020. Accordingly, in addition to the five sectors announced under the scheme on October 21, 2020, it is now proposed to bring the 26 stressed sectors identified by the Kamath Committee within the ambit of sectors eligible under on tap TLTRO.</p>
Jan 15, 2021	Variable rate reverse repo has been started again from January 15, 2021. Liquidity absorbed through the fixed rate reverse repo has been on rise, reflecting the surplus liquidity in the system. The Reserve bank of India made net outright purchases amounting to Rs 3.13 lakh crore during 2020-21.
Apr 07, 2021	On-Tap TLTRO announced on 09 oct, 2020 been extended up to September 30, 2021.

C. Special credit facilities

Apr 17, 2020	Refinancing facility for Small Industries Development Bank of India (SIDBI): special refinance facility of Rs 150 billion to SIDBI for on-lending/refinancing.
Apr 17, 2020	Liquidity facility for National Housing Bank: Rs 100 billion April 2020; Rs 50 billion August 2020 at the RBI's repo rate.
Apr 17, 2020	Liquidity facility for NABARD: National Bank for Agriculture and Rural Development (Rs 250 billion in April; Rs 50 billion in August 2020).
May 22, 2020	Liquidity facility for Exim Bank of India: Rs 150 billion
Apr 07, 2021	Refinance facility announced earlier, covering AIFIs has been extended to the financial year 2021-22 with amount Rs 500 billion.

Apr 07, 2021	Bank lending to registered NBFCs (other than MFIs) for on-lending to agriculture, MSMEs and housing would be permitted to be classified as priority-sector lending (PSL) until Sep 2021.
---------------------	--

D. Fiscal coordination

i. Any implicit or explicit cooperation with the fiscal authorities.

Apr 01, 2020	Increase Ways and Means Advances (WMA) limit by 30% from the existing limit for all states/UTs to enable state governments to tide over the situation arising from the outbreak of the Covid-19 pandemic. The revised limits will be valid till September 30, 2020. On Apr 17, 2020 this had been further increased by 60% over and above the level as on March 31, 2020.
Apr 20, 2020	Increased limit for WMA for the Government of India for the remaining part of first half of the financial year 2020-21 (April 2020 to September 2020) from Rs 1.2 trillion to Rs 2 Trillion.
May 22, 2020	Consolidated Sinking Fund (CSF) for state governments: Relax the rules governing withdrawal from the CSF to enable states to meet a larger proportion of their redemption of market borrowings falling due in the current financial year from the CSF. These relaxations to states will release an additional amount of about Rs 133 billion. Together with the normally permissible withdrawal, this measure will enable the states to meet about 45% of their redemptions due in 2020-21 through withdrawal from CSF. This change in withdrawal norms will remain valid till March 31, 2021.
Sep 28, 2020	Increase in WMA limits of states/UTs and OD regulations, respectively, for a further period of 6 months till March 31, 2021.
Apr 07, 2021	The enhanced WMA limit for states of Rs51.6 billion to remain until September 2021.

ii. Asset purchases

2020-21	During 2020-21, the RBI injected net liquidity of Rs 3.13 trillion through OMOs in government securities. RBI also conducted OMOs in State Developments Loans (SDLs) as a special case during 2020-21. To reduce the term premia Operation Twist (OT) was conducted 19 times on a regular basis.
2021-22	RBI announced a regular secondary market g-sec acquisition programme. RBI will commit upfront open market purchases of government securities in a given time period. Rs 1 trillion announced for Q1 FY2022.

E. Regulatory forbearance

Mar 27, 2020	Moratorium on term loans: RBI allows a moratorium of three months on payment of instalments in respect of all standard term loans outstanding as of March 1, 2020.
Mar 27, 2020	Deferment of interest on working capital facilities for three months on payment of interest in respect of all such facilities outstanding as of March 1, 2020.
Mar 27, 2020	Deferment of implementation of net stable funding ratio (NSFR) and last tranche of capital conservation buffer.
May 22, 2020	Moratorium on term loan instalments: extend the moratorium on term loan instalments by another three months, i.e., from June 1, 2020 to August 31, 2020.
May 22, 2020	Deferment of interest on working capital facilities: allow a deferment of another three months, from June 1, 2020 to August 31, 2020
May 22, 2020	Payment of interest on working capital facilities for the deferment period: Accumulated interest on working capital can be converted into a funded interest term loan repayable by March 31, 2021
May 22, 2020	Limit on group exposures under the large exposures framework: To facilitate the flow of resources to corporates, permitted bank's exposure to a group of connected counterparties increased from 25% to 30% of the eligible capital base of the bank. Applicable up to June 30, 2021.
Aug 06, 2020	Resolution framework for Covid-related stress: A window provided under the Prudential Framework to enable the lenders (under financial stress due to Covid) to implement a resolution plan in respect of eligible corporate exposures without change in ownership, and personal loans, while classifying such exposures as Standard subject to specified conditions.
Aug 06, 2020	To continue support for MSME restructuring, in respect of MSME borrowers facing stress because of the pandemic, lenders allowed to restructure their debt under the existing framework, provided the borrower's account was classified as standard as on March 1, 2020. This restructuring shall be implemented by March 31, 2021.
September 7, 2020	Incorporation of RBI's Kamath Committee Recommendations on the Resolution Framework for Covid-19-related Stress - Financial Parameters. specifying five specific financial ratios and the sector-specific thresholds for each ratio in respect of 26 sectors to be considered while finalising the resolution plans.
Oct 09, 2020	SLR holdings in held-to-maturity (HTM) category: The RBI on September 1, 2020, increased the limits under Held to Maturity (HTM) category from 19.5% to 22% of NDTL, in respect of SLR securities acquired on or after September 1, 2020, up to March 31, 2021. RBI extended this dispensation up to March 31, 2023. The HTM limits would be restored from 22% to 19.5% in a phased manner starting from the quarter ending June 30, 2022.

Dec 04, 2020	Dividend distribution by banks and NBFCs: scheduled commercial banks (SCBs) and cooperative banks notified not make any dividend pay-outs from profits pertaining to the financial year ended March 31, 2020 and a guideline has been provided for NBFCs as well.
Feb 05, 2021	Basel III capital regulations: The implementation of last tranche of the capital conservation buffer (CCB) of 0.625%, scheduled to take effect from April 1, 2020, deferred till April 1, 2021. Considering the continuing stress on account of Covid-19, the implementation of the last tranche of the CCB of 0.625% deferred from April 1, 2021 to October 1, 2021.

F. Changes in macroprudential regulations

Jun 21, 2020	Emergency Credit Line Guarantee Scheme (ECLGS) announced. RBI permitted member lending institutions to apply zero% risk weight on the credit facilities guaranteed under the Credit Line Guarantee Scheme guaranteed by the National Credit Guarantee Trustee Company (NCGTC) and backed by the govt of India.
Aug 06, 2020	Investment by banks in debt mutual funds and debt exchange-traded funds - capital charge for market risk: As per RBI's extant Basel III guidelines, if a bank holds a debt instrument directly, it would have to allocate lower capital as compared to holding the same debt instrument through a mutual fund (MF)/exchange-traded fund (ETF). This is because specific risk capital charge as applicable to equities is applied to investments in MFs/ETFs; whereas if the bank was to hold the debt instrument directly, specific risk capital charge is applied depending on the nature and rating of debt instrument. It has therefore been decided to harmonise the differential treatment existing currently.
Oct 09, 2020	Regulatory retail portfolio - revised limit for risk weights: The exposures included in the regulatory retail portfolio of banks are currently assigned a risk weight of 75%. In terms of the value of exposures, it has been prescribed that the maximum aggregated retail exposure to one counterparty should not exceed the absolute threshold limit of Rs 50 million. This has been increased to Rs 75 million in respect of all fresh as well as incremental qualifying exposures. This measure is expected to increase the credit flow to the small business segment.
Oct 09, 2020	Individual housing loans - rationalisation of risk weights: Recognising the criticality of real estate sector in the economic recovery, and its role in employment generation and the interlinkages with other industries, it has been decided, as a countercyclical measure, to rationalise the risk weights by linking them only with LTV ratios for all new housing loans sanctioned up to March 31, 2022. Such loans shall attract a risk weight of 35% where LTV is less than or equal to 80%, and a risk weight of 50% where LTV is more than 80% but less than or equal to 90%.

G. Measures for trade facilitation

Apr 01, 2020	Extension of realisation period of export proceeds: The time period for realization and repatriation of export proceeds for exports made up to or on July 31, 2020, has been extended to 15 months from the date of export from current 9 months.
May 22, 2020	Extension of time for payment for imports: extend the time period for completion of remittances against normal imports into India (except in cases where amounts are withheld towards guarantee of performance) from six months to twelve months from the date of shipment for such imports made on or before July 31, 2020.
May 22, 2020	Export credit: increase the maximum permissible period of pre-shipment and post-shipment export credit sanctioned by banks from the existing one year to 15 months, for disbursements made up to July 31, 2020.

H. Supervisory measures

- All supervised entities (SEs) were directed to implement their operational and business continuity plans for the smooth conduct of business processes in the wake of the Covid-19 pandemic.
- Special advisories were issued for management of cyber security risks with a focus on securing sensitive data such as customer and payment system data, among others.
- Reduction of compliance burden for brief period by granting flexibility in audit coverage and in furnishing supervisory data.
- All SEs were also advised to conduct stress tests to quantify and estimate the impact of Covid-19 on their financial projections so as to strengthen their capital adequacy positions accordingly.
- Companies are allowed to park the unutilised ECB proceeds in term deposits with AD Category-I banks in India for a maximum period of 12 months. This period has been extended to 1 March 2022 for ECB drawn down before 1 March 2020.

CHAPTER 14

Bank Indonesia's response to Covid-19: Synergise to build optimism for economic recovery

Perry Warjiyo

Bank Indonesia

EXTRAORDINARY MEASURES FOR AN EXTRAORDINARY CRISIS

In early 2020, Indonesia's economy was fuelled by optimism for stronger and more resilient economic growth. Several indicators pointed towards increased confidence in economic agents. Domestic demand as well as export and import activities were picking up and showing an encouraging development for the economy going forward. This development was also followed by higher foreign capital inflows to the domestic financial market, which encouraged the strengthening of the rupiah exchange rate.

However, optimism for the strengthening of Indonesia's economic growth started to fade when Covid-19 began to spread at the end of January 2020. The rapid worldwide spread of Covid-19 contributed to a decline in demand for Indonesian export products, in line with falling global demand and the disruption of global supply chains. It also triggered uncertainty in global financial markets and prompted an adjustment of investment to safe-haven assets. This put pressure on many world currencies, especially in developing countries, including Indonesia. Adjustments to foreign capital inflows on the domestic financial market from February 2020 depressed the rupiah exchange rate and were followed by increased volatility, causing the rupiah to depreciate to Rp16,575 against the US dollar on 23 March 2020, a depreciation of 16.24% (point-to-point) compared to the position at the end of 2019.

To mitigate the spread of Covid-19 in Indonesia, the government immediately implemented a number of policies, including on restricting mobility. The implementation of a large-scale social restriction policy (*Pembatasan Sosial Berskala Besar*, or PSBB) from April 2020 significantly reduced individual mobility. PSBB included restrictions on school activities (school from home) and office activities (work from home), the closure of public facilities including places of recreation and worship, restrictions on the operating of public transport, and restrictions on mobility between countries. This policy drastically reduced domestic economic activity, which resulted in a significant reduction in household consumption and investment activity. Indonesia's export performance also deteriorated due to the global economic slowdown. These unfavourable

developments put the Indonesian economy under pressure, particularly during the first half of 2020. Indonesia's economic growth fell to 2.97% (year-on-year) in the first quarter of 2020 and posted a contraction of -5.32% (year-on-year) in the second quarter.

The government, Bank Indonesia, and related authorities considered that the multidimensional and complex impact of Covid-19 would lead to a significant and rapid deterioration of health, social, and economic conditions. To prevent this, BI and related authorities saw the need for extraordinary policy responses that were immediate, massive, and pre-emptive – not only in terms of health and social aspects, but also economic aspects. From an economic perspective, the extraordinary policy responses were primarily directed at providing massive fiscal and monetary stimulus to the domestic economy in order to avoid a crisis, ensure economic recovery, and maintain macroeconomic and financial system stability.

A new law was established to support these extraordinary measures. As a pre-emptive, quick and extraordinary step to respond to the outbreak of the Covid-19 pandemic in Indonesia, as highlighted above, on 31 March 2020 the government issued Government Regulation in Lieu of Law (*Peraturan Pemerintah Pengganti Undang-undang*, or PERPPU) No.1 of 2020 concerning “State Financial Policy and Financial System Stability for Handling the Covid-19 Pandemic and/or in the context of Facing Threats that endanger the National Economy and/or Financial System Stability”. This PERPPU was later stipulated as Law (*Undang-undang*, or UU) No. 2 of 2020 on 16 May 2020, and was followed by the issuance of other supporting regulations to address the urgency of the Covid-19 pandemic, while continuing to prioritise the principles of prudence in the implementation of good governance, as well as transparency and accountability.

SYNERGISE TO BUILD OPTIMISM FOR ECONOMIC RECOVERY

Given the rapid, complexity, and multidimensional impact of Covid-19, the government and related authorities needed to synergise policies and not rely merely on one particular policy. For this reason, the government, Bank Indonesia, the Financial Services Authority (*Otoritas Jasa Keuangan*, or OJK), and the Deposit Insurance Corporation (*Lembaga Penjamin Simpanan*, or LPS), under the Financial System Stability Committee (*Komite Stabilitas Sistem Keuangan*, or KSSK), made a strong commitment to synergise supporting policies to mitigate the impact of the pandemic in Indonesia, as mandated in Law No. 2 of 2020. This law provided a strong legal foundation to take quick and accountable anticipatory measures to deal with the pandemic, so that the government, Bank Indonesia, OJK, and LPS could immediately take the necessary extraordinary measures. In this regard, Law No. 2 of 2020 gave the government the authority to undertake an expansionary fiscal policy by providing large amounts of stimulus to prevent a worsening in economic activity and to maintain financial system stability. This expansionary fiscal policy widened the fiscal deficit and raised the fiscal financing need for the 2020 State Budget. In terms of financing the fiscal deficit, Bank

Indonesia was given the authority to purchase long-term government securities (Surat Berharga Negara, or SBN) on the primary market. OJK was given authority related to mergers, consolidations, acquisitions, integration and conversion of financial service institutions. Meanwhile, LPS was given authority to strengthen its role in managing bank solvency, making decisions to save non-systemic banks, raising funds for handling failed banks, and formulating deposit insurance policies to support financial system stability.

ACCOMMODATIVE FISCAL POLICY: MASSIVE STIMULUS TO SUSTAIN THE ECONOMY

Throughout 2020, the government pursued an expansionary fiscal policy in order to overcome the impact of the pandemic – both the health and humanity aspects and the deteriorating economy. At the start of the pandemic, the government issued a stimulus for tax incentives, spending, as well as social assistance and food security. Law No. 2 of 2020 provided the legal basis for the government to pursue an expansionary fiscal policy, which allowed the fiscal deficit to exceed the limit of 3% of GDP until 2022. With this mandate, in 2020 the government issued two regulations to widen the deficit of 2020 State Budget. The first was through Presidential Decree No. 54 of 2020, dated 3 April 2020. This was later revised by Presidential Decree No. 72 of 2020, dated 25 June 2020, allowing the fiscal deficit to widen to 6.34% of GDP. With this widening of the fiscal deficit, government spending rose to Rp2,739.2 trillion (US\$187.97 billion) due to additional spending on the National Economic Recovery (*Pemulihan Ekonomi Nasional*, or PEN) programme, for spending on both public goods and non-public goods, totalling Rp695.2 trillion (\$47.71 billion), or 4.2% of GDP. The government continued to expand and made some adjustments to the PEN programme to make its implementation better and easier to execute, so as to effectively support economic recovery.

TABLE 1 POSTURE CHANGES AND 2020 STATE BUDGET REALISATION

	UU No.20/2019	Perpres No.54/2020	Perpres No.54/2020	Temporary realisation*
Government revenues	Rp2,232.2 trn	Rp1,760.9 trn	Rp1,699.9 trn	Rp1,633.6 trn
Government expenditures	Rp2,540.4 trn	Rp2,613.8 trn	Rp2,739.2 trn	Rp2,589.9 trn
Budget deficit	Rp307.2 trn	Rp852.9 trn	Rp 1,039.2 trn	Rp956.3 trn
Budget deficit (% GDP)	1.76%	5.07%	6.34%	6.09%
Financing from loans	Rp741.8 trn	Rp1,439.8 trn	Rp1,645,3 trn	

Note: * Press Conference 2020 State Budget Realization on 6 January 2021

Source: Ministry of Finance

The widening of the fiscal deficit raised the need for additional financing of the 2020 State Budget, which, among others, was met by Bank Indonesia as mandated by Law No. 2 of 2020. The contribution of Bank Indonesia to financing the fiscal deficit showed the strong coordination between fiscal and monetary policies in mitigating the impact of the Covid-19 pandemic in Indonesia. In this regard, the government was given the authority to issue SBN with a specific purpose related to the Covid-19 pandemic. Meanwhile, Bank Indonesia's authority was enhanced, enabling it to purchase long-term SBN – both on the primary market and through private placement – to support the financing of the stimulus.

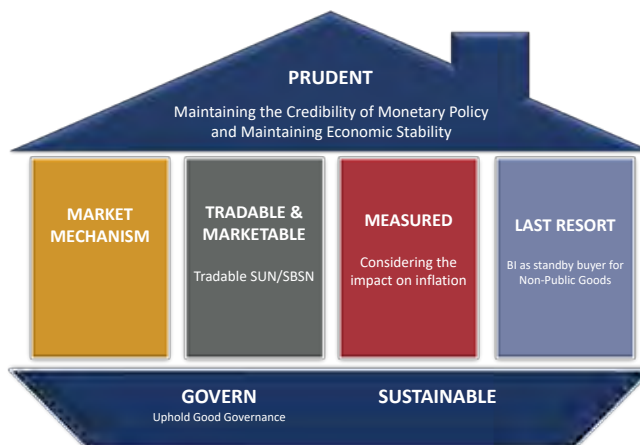
THE CENTRAL BANK'S CONTRIBUTION: FINANCING THE DEFICIT

Bank Indonesia's commitment to funding and burden sharing in the 2020 State Budget was carried out while adhering to the principle of prudence in order to maintain economic stability, including its impact on inflation. The implementation of funding and burden sharing was carried out with due regard to the credibility and integrity of economic, fiscal and monetary management, as well as the financial sustainability of Bank Indonesia and the government, so as to promote sustainable economic growth. The scheme and mechanism for coordinating the purchase of SUN/SBSN was carried out through two Joint Decrees (*Keputusan Bersama*, or KB) between the Minister of Finance and the Governor of Bank Indonesia, the first dated 16 April 2020 (KB I) and the second dated 7 July 2020 (KB II), with the following details:

- In KB I, Bank Indonesia purchased long-term SUN/SBSN on the primary market, and Bank Indonesia also acted as the standby buyer in case the the issuance of SUN/SBSN could not be absorbed in the primary market. The role of Bank Indonesia in financing the fiscal deficit was carried out with prudence and adhering to four main principles: (i) market mechanisms were prioritised; (ii) the impact on inflation was considered; (iii) SUN/SBSN purchased were tradable and marketable; and (iv) Bank Indonesia was the last resort. KB I also stipulated that the issuance of SUN/SBSN by the government was carried out after prioritising other sources of financing, and also by taking into account the sustainability of the State Budget. Purchases of SUN/SBSN by Bank Indonesia were conducted based on sequence of priority: (i) an SUN/SBSN auction by submitting a non-competitive bid; (ii) a 'greenshoe' option if the SBN target is not met through an auction; and (iii) private placement in the event that the SBN target is not fulfilled through auctions and additional auction (the greenshoe option).
- In KB II, Bank Indonesia purchased SUN/SBSN directly through private placement for financing expenditure on public goods in the 2020 State Budget, amounting to Rp397.56 trillion (\$27.28 billion). Public goods spending was related to health, social protection, and sectoral ministries/agencies and local governments, where Bank Indonesia bore all the costs of issuing the SBN. In addition, for the issuance of

SBN for funding non-public goods expenditures in the 2020 State Budget related to MSMEs and corporations, Bank Indonesia also contributed Rp177.03 trillion (\$12.15 billion) towards burden sharing with the government.

FIGURE 1 PRINCIPLES OF FUNDING AND BURDEN SHARING



Large amounts of funding and burden sharing by Bank Indonesia for the 2020 State Budget provided assurance on the source of fiscal deficit financing, allowing the government to focus on accelerating the realisation of the budget for the national economic recovery. Under the KB I scheme, in 2020 Bank Indonesia purchased long-term SBN from the primary market through the market mechanism amounting to Rp75.85 trillion (\$5.21 billion), consisting of Rp33.78 trillion in SBSN and Rp42.07 trillion in SUN. Meanwhile, the burden-sharing scheme funding for public goods by Bank Indonesia under KB II reached Rp397.56 trillion (\$27.28 billion) by the end of 2020. The overall purchase of SBN by Bank Indonesia for funding and burden sharing of the 2020 State Budget in support of the economic recovery programme has reached Rp473.42 trillion (\$32.49 billion). In addition, in the burden-sharing scheme for non-public goods, specifically for MSMEs, Bank Indonesia’s contribution was Rp114.81 trillion (\$7.88 billion) and for non-public goods for corporations it was Rp62.22 trillion (\$4.27 billion). Bank Indonesia will continue to purchase SBN on the primary market in 2021 to support financing for the 2021 State Budget based on KB I, which was extended on 11 December 2020. The funding and burden-sharing scheme under KB II was implemented in 2020 only (as a one-off policy).

In addition to supporting government deficit financing, according to Law No.2 of 2020, Bank Indonesia can buy/repurchase securities owned by LPS to manage solvency problems in systemic and non-systemic banks. Bank Indonesia can also provide short-term liquidity loans or short-term liquidity financing based on *sharia* principles to systemic or non-systemic banks. In addition, Bank Indonesia has the authority to regulate the mandatory reception and usage of foreign exchange proceeds from exports

by residents, including regulation regarding the transfer, repatriation and conversion of foreign exchange proceeds from exports by residents, in order to maintain macroeconomic and financial system stability. This measure is not intended as an effort to control foreign exchange movement, but rather as management of foreign exchange that only applies to residents (it does not apply to non-residents/foreign investors). Thus, external support for financing, both in the form of portfolio investment and foreign direct investment (FDI), is expected to remain supportive. Bank Indonesia can also provide access to funding for corporations/private companies by means of repurchase of SUN/SBSN owned by corporations/private companies through banking.

To strengthen financial system stability, OJK and LPS have also taken various policies in accordance with the mandate of Law No.2 of 2020. OJK has issued various forward-looking and countercyclical policies for banks, capital markets and non-bank financial institutions to mitigate the burden of the Covid-19 pandemic on the performance of the financial sector, which could eventually compromise the soundness of national economy and severely affect people's welfare. Policies have also been implemented to support the government's policy to accelerate national economic recovery, such as restructuring MSME and corporate loans. Regulation on relaxation of banking relating to credit restructuring was issued in the form of postponing principal and interest payments, to prevent the negative impact of increasing non-performing loans and weakening capital. Meanwhile, in addition to the policy of lowering the interest rate in its Deposit Guarantee Program, LPS also relaxed the penalty for late payment of premiums in order to reduce liquidity pressures and mitigate the impact of the worsening stability of the financial system amid the pandemic. In order to support the national economic recovery programme, LPS also prioritised the repayment of government funds placed in participating banks in the form of deposits.

BANK INDONESIA POLICY MIX

Bank Indonesia strengthened the policy mix to ensure economic stability and support recovery of the national economy, which was significantly affected by Covid-19 pandemic. Bank Indonesia's policy response was pursued through an accommodative monetary policy, the relaxation of macroprudential policies, and the strengthening of payment system policies to accelerate the digital economy and finance. Bank Indonesia continues to encourage synergy and coordination with related authorities, as well as various other supporting policies.

1. **Monetary policy.** Amid plummeting economic activity and rising uncertainty, necessary measures should be taken to prevent further economic deterioration, maintain exchange rate stability, and ensure the well-functioning of the financial system. Considering that inflationary pressure will remain benign, Bank Indonesia had opted to undertake a relaxation of monetary policy, in terms of both interest rates and liquidity, as well as strengthening the stabilisation of the rupiah.

First, **Bank Indonesia lowered the BI seven-day reverse repo rate (BI7DRR) policy rate.** BI7DRR was lowered five times in 2020, by 125 basis points in total, to 3.75% by the end of the year. This figure is the lowest in history. This interest rate reduction was carried out in a measured and gradual manner, taking into account inflation and the attractiveness of domestic financial assets, as well as external stability.

Second, **Bank Indonesia provided monetary stimulus through quantitative easing (QE).** As of 30 December 2020, Bank Indonesia had injected liquidity through QE amounting to Rp726.57 trillion (\$49.86 billion), or around 4.7% of GDP. This is one of the largest amounts among developing countries, which have averaged around 1.7% GDP. This liquidity injection mainly came from a reduction in the reserve requirement (*Giro Wajib Minimum*, or GWM), with a value of around Rp155 trillion (\$10.64 billion), and from monetary expansion from open market operations, with a value of around Rp555.77 trillion (\$38.14 billion). In relation to the GWM policy, Bank Indonesia reduced the GWM by 300 basis points in 2020, including relaxation of the GMW by 50 basis points as an incentive to banks that extend credit to MSMEs and export–import activities. The central bank also lowered the reserve requirement for foreign currency by 400 basis points in order to boost foreign exchange liquidity in the banking sector and to ease pressure on the foreign exchange market. Bank Indonesia also relaxed regulation on the macroprudential intermediation ratio (MIR) by removing the penalty for banks that do not comply with the regulation, resulting in additional liquidity to banks of around Rp15.8 trillion (\$1.08 billion). In the second half of 2020, Bank Indonesia also paid interest of 1.5% per annum to banks that met the reserve requirement in rupiah, both on a daily and average basis.

Third, **Bank Indonesia stabilised the rupiah to keep it in line with fundamentals of the economy and market mechanisms.** This was aimed at maintaining the confidence of economic agents so that adjustments in the economy might take place without compromising macroeconomic and financial stability. Efforts to stabilise the rupiah were carried out through a triple intervention: interventions on the spot market, in domestic non-deliverable forwards (DNDFs), and in purchases of government securities (SBN) from the secondary market. The stabilisation of the rupiah was also supported by the adequacy of foreign reserves. To ensure this, Bank Indonesia has engaged with other authorities through bilateral swap cooperation (with China, Japan, Singapore, and Malaysia) and added repo line cooperation with several central banks and international institutions, including the Federal Reserve Bank of New York and the Bank for International Settlements (BIS). In the longer perspective, efforts to stabilise the rupiah have been carried out through the implementation of local currency settlements (LCSs) with a number of trade and investment partner countries order to reduce dependency on hard currencies. LCS cooperation through the Appointed Cross Currency Dealer (ACCD) scheme

was carried out with Japan, Malaysia, Thailand, and China; LCS cooperation through the Bilateral Currency Swap Agreement (BCSA) scheme was carried out with China, South Korea, and Australia.

Fourth, **Bank Indonesia also strengthened its monetary operation strategy to maintain liquidity and enhance efficiency in the money market, with two-sided monetary operations: liquidity absorption and liquidity injection.**

This was done by increasing the frequency of DNDF auctions (since 2 January 2020), repo auctions of up to 12-month tenor, and daily auctions (since 20 March 2020). Bank Indonesia also increased the frequency of FX swap auctions to daily (since 19 March 2020). In addition, Bank Indonesia strengthened the instrument for term deposits in foreign currency to improve liquidity management on the domestic foreign exchange market, and encouraged banks to use the liquidity from the reduction in GWM for domestic needs. Bank Indonesia strengthened monetary operations and deepened the Islamic financial market through the implementation of the Sharia Principles-Based Liquidity Facility (*Fasilitas Likuiditas Berdasarkan Prinsip Syariah*, or FLiSBI) and Sharia-based Liquidity Management (*Pengelolaan Likuiditas Berdasarkan Prinsip Syariah*, or PaSBI) (since 5 October 2020).

These policies have contributed to promoting the recovery of the national economy and also to maintaining stability in the financial system.

2. **Macroprudential policy.** Bank Indonesia continued to carry out accommodative macroprudential policies, especially to mitigate the widespread impact of the Covid-19 pandemic on the financial system and to support national economic recovery. Taking into account the stability of the financial system and also the financial cycle that is still below its long-term equilibrium, Bank Indonesia had pursued a number of macroprudential policies as follows:

First, **Bank Indonesia relaxed its macroprudential policy by easing the macroprudential intermediation ratio** (*Rasio Intermediasi Makroprudensial*, or RIM/RIM Sharia – i.e. the ratio between financing and banking funding). The central bank did this by not imposing penalties on banks that have a RIM/RIM Sharia outside the target range of 84–94% (since 1 May 2020 and valid for one year). This was done considering the still limited demand for credit.

Second, to ensure good quality and adequate bank liquidity, **Bank Indonesia made adjustments to the macroprudential liquidity buffer** (*Penyanga Likuiditas Makroprudensial*, or PLM/Sharia PLM) policy, which was carried out in conjunction with the policy to reduce the reserve requirement by 200 basis points. The PLM ratio – i.e. the ratio of liquid assets as a liquidity buffer in the form of SBN and SBI – was raised by 200 basis points for conventional commercial banks (*Bank Umum Konvensional*, or BUK) and 50 basis points for Sharia commercial banks/business units (*Bank Umum Syariah*, or BUS/Unit

Usaha Syariah, or UUS). The PLM ratio was strengthened from 4% to 6% against rupiah deposits for BUK, and to 4.5% against rupiah deposits for Islamic banks. This increase in the PLM was fulfilled through the purchase of SUN/SBSN issued by the government in the primary market. All portions of PLM can be used to underly repo transactions with Bank Indonesia.

Third, **Bank Indonesia maintained the countercyclical capital buffer (CCB) at around 0% to encourage credit growth.**

Fourth, **Bank Indonesia lowered the minimum downpayment limit for environmentally friendly motor vehicle loans (*Kredit Kendaraan Bermotor*, or KB) from 5–10% to 0% (effective 1 October 2020) to support the acceleration of the government's battery-based electric motor vehicle programme (*Kendaraan Bermotor Listrik Berbasis Baterai*, or KBL BB).**

We believe that the relaxation of our macroprudential policies will provide flexibility for banks in accelerating credit to support recovery of domestic economic growth while maintaining financial stability.

3. **Payment system policy (*Sistem Pembayaran*, or SP).** Bank Indonesia views the impact of the Covid-19 pandemic as part of the momentum to further accelerate the digitalisation of the payment system. To that end, **Bank Indonesia has accelerated the digitalisation of the payment system based on the 2025 Indonesian Payment System Blueprint (*Blueprint Sistem Pembayaran Indonesia*, or BSPI) to expand the digital economy and finance as part of economic recovery efforts and to strengthen the structural foundation for the Indonesian economy.**¹ The five main initiatives in BSPI 2025 are (i) open banking; (ii) the retail payment system; (iii) financial market infrastructure; (iv) data; and (v) regulatory, licensing and supervisory reforms.

In addition, since Covid-19 first began to spread, Bank Indonesia has responded by relaxing various payment system policies.

First, **Bank Indonesia lowered the ceiling for fees for fund transfers through the Bank Indonesia National Clearing System (SKNBI) to encourage greater use and efficiency of non-cash transactions during the pandemic.**

¹ The Indonesia Payment Systems Blueprint (BSPI) 2025 presents the orientation of policy at Bank Indonesia in order to navigate the payment system industry in the era of the digital economy and finance. The Blueprint contains five payment system visions towards 2025 for implementation by five working groups: Open Banking; Retail Payment System; Large-Value (Wholesale) Payment System and Financial Market Infrastructure; Data and Digitalisation; and Regulatory, Licensing and Supervisory Reforms. BSPI 2025 will be realised through 23 key deliverables implemented in stages from 2019 to 2025. Details can be accessed at www.bi.go.id/en/fungsi-utama/sistem-pembayaran/blueprint-2025/default.aspx.

Second, in addition to the relaxation of credit card policies in the form of lowering the maximum interest rate limit, minimum payments, and late payment fines, **Bank Indonesia also eased the requirements in a package of credit card regulations**, including support for credit card issuers in lengthening repayment periods during the pandemic period.

Third, **Bank Indonesia continued to strive to support the expansion of digitisation by lowering the merchant discount rate (MDR) of the Quick Response Code Indonesia Standard (QRIS)**. QRIS MDR was cut to 0% for merchants in the micro-business category.² This policy is aimed at promoting the digitalisation of MSMEs in line with the “Proud of Indonesian-made Products” movement (*Gerakan Nasional Bangga Buatan Indonesia*, or Gernas BBI).

Fourth, to improve cost efficiency and the tariff structure and to stimulate economic activity, **Bank Indonesia lowered the Bank Indonesia Real Time Gross Settlement (BI-RTGS) service fees**, starting from 1 December 2020.

Fifth, **Bank Indonesia continued to provide support to government programmes**, including through the electronification of non-cash social assistance payments. **Bank Indonesia also encouraged the electronification of regional government financial transactions**, which is also an effort to strengthen the governance of regional government budgets.

In 2020, in addition to pursuing a policy mix to mitigate the negative impact of the Covid-19 pandemic on the national economy, Bank Indonesia also moved forward with a reform agenda, including reform of the money market. In 2020, Bank Indonesia issued the Money Market Development Blueprint (BPPU) 2025 in an effort to accelerate the creation of a liquid, efficient, and deep financial market. The aims were to support monetary and financial system stability and to accelerate national economic development. BPPU 2025 is being implemented by encouraging the digitisation and strengthening of financial market infrastructure, strengthening the effectiveness of monetary policy, and developing sources of economic financing and risk management. Implementation of BPPU 2025 is supported by strengthening synergies between Bank Indonesia and the relevant authorities and players in the financial industry.

4. **Coordination between Bank Indonesia and the government.** Bank Indonesia consistently maintains and improves synergies and coordination with the government and other relevant authorities in maintaining economic stability and promoting economic recovery. Under the Financial System Stability Committee, which consists of Bank Indonesia, the Ministry of Finance, OJK, and LPS,

² The Quick Response Code Indonesian Standard (QRIS) is the unification of various kinds of QR from various payment system service providers (*Penyelenggara Jasa Sistem Pembayaran*, or PJSP) using QR codes. QRIS was developed by the payment system industry together with Bank Indonesia so that the QR code transaction process would be easier, faster, and more secure.

coordination was primarily directed towards policies related to crisis prevention and resolution. Coordination was also conducted to promote economic recovery through various strategic steps, one of which is to synergise policies in fiscal, monetary, payment system, macroprudential, and deposit insurance areas, as well as other key areas.

In addition, to manage the positive perceptions of international stakeholders regarding the Indonesian economy, Bank Indonesia and the government have continued to work together in conducting more intensive communication with global investors and rating agencies to convey the authorities' policy responses to mitigate the impact of Covid-19 on the Indonesian economy, especially early on in the pandemic when uncertainty was at its highest. During that difficult time, to boost the confidence of stakeholders, communication by Bank Indonesia to the public was conducted more intensively and was delivered through a one-stop policy, directly by the Governor, using various communication channels. This strategy has succeeded in maintaining Indonesia's sovereign credit rating (SCR) with various major rating agencies at investment-grade level, amidst a decline in SCRs of other emerging market economies.

A series of coordination steps, as well as policy synergy between Bank Indonesia and related authorities, have been able to maintain Indonesia's economic resilience amidst the uncertainty and risk of crisis due to the Covid-19 pandemic. Going forward, Bank Indonesia will continue to strengthen coordination and synergies to accelerate national economic recovery towards strong, sustainable, balanced, and inclusive economic growth.

RECOVERY PROCESS IN PROGRESS

The synergy of policies pursued by the government, Bank Indonesia, and related authorities encouraged an improvement in the domestic economy in the second semester of 2020. Pressure on the economy gradually eased in the second semester. Economic growth began to improve in line with the easing of the PSBB, the impact of the greater realisation of fiscal stimulus, and the improvement in the global economy. Rupiah stabilisation measures undertaken by Bank Indonesia reduced pressure on the currency, which strengthened in the second semester of 2020 in line with increasing foreign capital inflows. Indonesia's balance of payments in the second semester also recorded a higher surplus than in the first semester of 2020. After previously falling to \$121 billion in March 2020, foreign exchange reserves picked up to \$135.9 billion at the end of 2020, equivalent to the financing of 9.8 months of imports and government foreign debt, which is above the international adequacy standard of around three months of imports. In line with weak domestic demand, the Consumer Price Index (CPI) inflation in 2020 was recorded at 1.68% (year-on-year), below the 3.0% \pm 1% target and the lowest inflation level in the last 20 years.

Financial system stability continued to improve in line with the positive impact of easing macroeconomic policies and reduced uncertainty in global financial markets. The transmission of monetary easing continued, reflected in declining interest rates and a higher volume of interbank transactions. Cash and non-cash payment transactions also improved in the second semester as economic activity began to recover.

All of the positive developments in the national economy in the second semester of 2020 are inseparable from the successful synergy of policies pursued by the government, Bank Indonesia, and related authorities, which are supported by a strong legal foundation. Policy synergy has been the key to overcoming the impact of Covid-19 and supporting economic recovery.

OUTLOOK AND POLICY DIRECTION

The Indonesian economy is predicted to continue improving in 2021, supported by progress in the handling of Covid-19 (including vaccinations), global economic recovery, as well as stimulus and policy strengthening. Some early indicators by the end of December 2020 pointed towards optimism for global economic recovery, which was supported by increased mobility and policy stimulus in various countries. The speed of recovery will be heavily influenced by vaccination rollouts and public discipline in implementing Covid-19 protocols, which is a prerequisite for national economic recovery.

Going forward, strengthening policy synergy will continue to be pursued to build optimism for a better economic recovery. The prospect of domestic economic recovery is also supported by five policies: (i) the opening up productive and safe sectors nationally and in respective regions; (ii) the accelerated realisation of fiscal stimulus; (iii) increasing bank credit from the demand and supply side; (iv) continued monetary and macroprudential stimulus; and (v) accelerating economic and financial digitalisation, particularly related to the development of MSMEs. Bank Indonesia estimates that Indonesia's economic growth in 2021 will increase in the range of 4.3–5.3%, while inflation rate will be kept within the target of 3% ± 1% and the current account deficit will also be maintained at 1.0–2.0% of GDP.

In the medium term, the Indonesian economy is predicted to bounce back to an upward trajectory, bolstered by the improvement in the world economy and strengthening synergies in policy and structural reforms. The global economic outlook is predicted to improve further, in line with easing pressure from Covid-19 and the positive impact of policy stimuli in many countries. Global economic prospects will support the improvement of Indonesia's exports, which in turn will raise production, investment and consumption activities. Under these conditions, domestic economic growth is predicted to be in the range of 5.5–6.1% by 2025.

ABOUT THE AUTHOR

Dr. Perry Warjiyo was born in Sukoharjo, Indonesia in 1959. He received a bachelor degree in Accounting in 1982 from Gadjah Mada University, a master degree in 1989 and PhD degree in 1991 both in Monetary and International Finance from Iowa State University.

Dr. Perry has officially served as the Governor of Bank Indonesia since May 24th, 2018. Before serving as the Governor of Bank Indonesia, he was the Deputy Governor of Bank Indonesia from 2013-2018 for monetary policy, international policy, sharia economics and finance, and financial market deepening. Prior to this position, Dr. Perry served as the Assistant Governor for monetary, macroprudential, and international policy, the post he had held after the Executive Director of Economic Research and Monetary Policy Department, Bank Indonesia since 2009. Before re-joining Bank Indonesia since July 2009, he had served for two years as the Executive Director in the International Monetary Fund (IMF), representing the 13 member countries in the South-East Asia Voting Group (SEAVG). He has a long-standing career in Bank Indonesia in the areas of economic research and monetary policy, central banking studies and training, office of the Governors, monetary policy strategy and organization transformation, foreign exchange management, and international issues.

Dr. Perry is also an extramural lecturer in the post-graduate studies at the University of Indonesia, a distinguished lecturer on international economics and monetary economics at Gadjah Mada University, and a visiting lecturer at a number of reputable universities in Indonesia and abroad including University of Sydney. In addition, he has authored and published a number of books, journals, and papers on economy, monetary, and international issues. His latest book of Central Bank Policy: Theory and Practice was published by Emerald Publishing Limited in July 2019. He has also delivered numerous high-level keynote speeches that have influenced public policy around the globe.

ANNEX: CHRONOLOGY OF POLICY

No.	Date	Policy mix	Policy
1.	02.01.2020	Monetary	Reducing the GWM by 50 bps for BUK to 5.50% and BUS/UUS to 4.00% (press release for the Board of Governors Meeting (Rapat Dewan Gubernur, or RDG), November 2019)
2.	20.02.2020	Monetary	Lowering the BI7DRR by 25 bps to 4.75%, deposit facility to 4.00%, lending facility to 5.50% (RDG press release, February)
3.	16.03.2020	Monetary	Reducing the Forex GWM 400 bps to 4% (Bank Indonesia press release)
4.	19.03.2020	Monetary	Lowering BI7DRR by 25 bps to 4.50%, deposit facility to 3.75%, lending facility to 5.25% (RDG press release, March)
5.	19.03.2020	Monetary	Increasing the frequency of 1-, 3-, 6-, and 12-month FX swap auctions from three times per week to daily (RDG press release, March)
6.	20.03.2020	Monetary	Extending the SBN repo to 12 months and conducting daily auction (RDG press release, March)
7.	01.04.2020	Monetary	Extending incentives for easing daily statutory reserves in rupiah by 50 bps (originally only for export-import financing banks, expanded to MSME financing banks and priority sectors) valid up to December 31 st , 2020 (RDG press release, March)
8.	01.04.2020	Payment system	Reducing SKNBI fees from banking to BI from Rp600 to Rp1 and from customers to banks from Rp4,500 to a maximum of Rp2,900 valid up to December 31 st , 2020 (RDG press release, March)
9.	01.04.2020	Payment system	Adjusting the QRIS MDR to 0% for the micro business category up to September 30 th , 2020 (RDG press release, April)
10.	01.05.2020	Monetary	Reducing the Rupiah GWM by 200 bps for BUK and 50 bps for BUS/UUS (RDG press release, April)
11.	01.05.2020	Macroprudential	Increasing the PLM ratio by 200 bps to 6.00% of DPK in rupiah for BUK and 50 bps to 4.50% of DPK in Rupiah for BUS/UUS which must be fulfilled through the purchase of SUN/SBSN on the Primary market (RDG press release, April)
12.	01.05.2020	Macroprudential	Not imposing additional current account obligations to fulfil the RIM for BUK/BUS/UUS (RDG press release, April)

13.	01.05.2020	Payment system	<ul style="list-style-type: none"> Lowering the maximum limit on credit card interest rates from 2.25% to 2.00% per month. Temporarily reducing the minimum payment value for credit cards from 10% to 5% (up to December 31st, 2020) Temporarily reducing late fees for credit card payments from 3% or max. Rp150,000 to 1% or max. Rp100,000 (up to December 31st, 2020) Extending the term of credit card payments for customers affected by Covid-19 (the discretion of each issuer) (up to December 31st, 2020) (RDG press release, April)
14.	18.06.2020	Monetary	Lowering BI7DRR by 25 bps to 4.25%, deposit facility to 3.50%, lending facility to 5.00% (RDG press release, June)
15.	16.07.2020	Monetary	Lowering BI7DRR by 25 bps to 4.00%, deposit facility to 3.25%, lending facility to 4.75% (RDG press release, July)
16.	01.08.2020	Monetary	Provision of current account services to banks that meet the Rupiah statutory reserve requirement (daily and average) of 1.5% per year with the proportion that is calculated to receive demand deposits of 3% of TPF (RDG press release, June)
17.	17.09.2020	Monetary	Extending the period of easing daily statutory reserves in Rupiah by 50 bps (originally only for export-import financing banks, expanded to MSME financing banks and priority sectors) up to June 30 th , 2021 (originally until December 31 st , 2020) (RDG press release, September)
18.	17.09.2020	Payment system	Extending the QRIS 0% Merchant Discount Rate (MDR) policy for Micro Enterprises up to December 31 st , 2020 (previously September 30 th , 2020) (RDG press release, September)
19.	29.09.2020	Monetary	Improving the provisions of the Short-Term Liquidity Loan for BUK and Short-Term Liquidity Financing for BUS (PLJPS) that strengthens BI's position as lender of the last resort (Bank Indonesia press release)
20.	01.10.2020	Macroprudential	Lowering the minimum downpayment limit from the range of 5-10% to 0% for environmentally friendly motor vehicles (RDG press release, August)
21.	19.11.2020	Monetary	Lowering BI7DRR by 25 bps to 3.75%, deposit facility to 3.00%, lending facility to 4.50% (RDG press release, November)
22.	19.11.2020	Macroprudential	Continuing the 0% Countercyclical Capital Buffer policy, RIM 84-94% with 0% disincentive parameters, 6% PLM with 6% repo flexibility (RDGB press release and RDG press release, November)

23.	19.11.2020	Payment system	Extending the period of reducing SKNBI fees up to June 30 th , 2021 (previously December 31 st , 2020) (RDG press release, November)																														
24.	19.11.2020	Payment system	Extending the period of easing late credit card payment fines up to December 31 st , 2021 (previously up to December 31 st , 2020) Extending the period of easing the minimum payment limit up to June 30 th , 2021 (previously until December 31 st , 2020) (RDG press release, November)																														
25.	01.12.2020	Payment system	<p>Details of lowering RTGS costs:</p> <table border="1"> <thead> <tr> <th></th> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td colspan="3">Single transfer</td> </tr> <tr> <td>Zone 1</td> <td>Rp. 9,000</td> <td>Rp. 6,000</td> </tr> <tr> <td>Zone 2</td> <td>Rp. 18,000</td> <td>Rp. 15,000</td> </tr> <tr> <td>Zone 3</td> <td>Rp. 23,000</td> <td>Rp. 21,000</td> </tr> <tr> <td colspan="3">Multiple transfer</td> </tr> <tr> <td>Zone 1</td> <td>Rp. 35,000</td> <td>Rp. 28,000</td> </tr> <tr> <td>Zone 2</td> <td>Rp. 35,000</td> <td>Rp. 28,000</td> </tr> <tr> <td>Zone 3</td> <td>Rp. 50,000</td> <td>Rp. 45,000</td> </tr> <tr> <td>Price capping</td> <td>Rp. 35,000</td> <td>Rp. 30,000</td> </tr> </tbody> </table> <p>(RDG press release, November)</p>		Before	After	Single transfer			Zone 1	Rp. 9,000	Rp. 6,000	Zone 2	Rp. 18,000	Rp. 15,000	Zone 3	Rp. 23,000	Rp. 21,000	Multiple transfer			Zone 1	Rp. 35,000	Rp. 28,000	Zone 2	Rp. 35,000	Rp. 28,000	Zone 3	Rp. 50,000	Rp. 45,000	Price capping	Rp. 35,000	Rp. 30,000
	Before	After																															
Single transfer																																	
Zone 1	Rp. 9,000	Rp. 6,000																															
Zone 2	Rp. 18,000	Rp. 15,000																															
Zone 3	Rp. 23,000	Rp. 21,000																															
Multiple transfer																																	
Zone 1	Rp. 35,000	Rp. 28,000																															
Zone 2	Rp. 35,000	Rp. 28,000																															
Zone 3	Rp. 50,000	Rp. 45,000																															
Price capping	Rp. 35,000	Rp. 30,000																															
26.	17.12.2020	Payment system	Extending the 0% QRIS MDR policy for micro businesses up to March 31 st , 2021 (previously December 31 st , 2020) (RDG press release, November)																														
27.	2020	Monetary	Rupiah liquidity injection through monetary expansion of around Rp555.77 trillion (\$38.14 billion) (Economic Report on Indonesia (<i>Laporan Perekonomian Indonesia</i> , or LPI) 2020)																														
28.	2020	Monetary	Rupiah liquidity injection from the decrease in GWM of around Rp155 trillion (\$10.64 billion) (LPI 2020)																														
29.	2020	Monetary/fiscal	Purchasing long-term SBN from the primary market and / or through a market mechanism of around Rp473.42 trillion (\$32.49 billion) for the realisation of funding and burden sharing for the 2020 State Budget for public goods (LPI 2020)																														
30.	2020	Monetary/fiscal	Realizing the burden sharing with the Government for the issuance of SBN to fund the 2020 State Budget for MSMEs non-public goods Rp114.81 trillion (\$7.88 billion) and corporate non-public goods Rp62.22 trillion (\$4.27 billion) (LPI 2020)																														

CHAPTER 15

Bank of Russia policy during the Covid-19 pandemic

271

Ksenia Yudaeva¹

Bank of Russia

During the Covid-19 crisis, the Russian economy confronted three problems: (1) the demand and supply consequences of the lockdowns; (2) increased asset price volatility, particularly during March 2020; and (3) a collapse of oil prices in March–April 2020. While the first two shocks were common to most countries, the third hit oil-exporting countries, including Russia. In designing its policy response, the Russian central bank tried to address the consequences and spillovers of all three shocks.

Moreover, the Bank of Russia is a mega-regulator – i.e. it is both a monetary policy institution and a supervisor and regulator of bank and non-bank financial institutions and markets. This broad mandate allowed us to develop a monetary and regulatory policy mix that addressed specific challenges at each stage of the crisis. Monetary policy and regulatory measures were complementary and mutually reinforced each other. We also cooperated with the government on some of the anti-crisis measures.

In this chapter, I shall briefly describe the policy mix that we used at different stages of the crisis and then describe some policy trade-offs in more detail.

EVOLUTION OF THE BANK OF RUSSIA'S POLICY MIX: RATIONALE AND PRIORITIES

At the first stage of the crisis, in March 2020, our main concerns were volatility of global financial markets and the collapse of oil prices. The Bank of Russia responded with a policy mix, which included (1) monetary policy, (2) FX policy, and (3) regulatory forbearance.

Addressing a spike in financial market volatility and an increase in risk premia, we paused monetary policy easing and introduced a temporary mechanism of additional FX sales that occurred when oil prices were below \$25 per barrel. These sales topped up FX sales activated in accordance with the fiscal rule mechanics. The regulatory forbearance

1 I thank Alexander Morozov, Elizaveta Danilova, Alexei Zobotkin and Elvira Nabiullina for their comments and suggestions.

measures included an allowance for bank to fix the 1 March 2020 exchange rate and asset prices for regulatory purposes until 30 September 2020. As a safeguard, we also offered extra FX and ruble liquidity through stand-by swaps and repo auctions, respectively.

Addressing the problems that the Russian economy faced at that time, the Bank of Russia took support measures for small and medium-sized enterprises (SMEs) and the healthcare and pharmaceutical industry. We launched a special refinancing programme (of 500 billion rubles, or approximately \$6.6 billion) for banks, which kept their small business credit portfolio above 90% of the pre-crisis level. Loans under the programme were granted for a period of one year at a rate of 4% (i.e. the policy rate minus 2 percentage points). The interest rate on these loans was later reduced to 2.25%, in parallel with our policy rate reduction. We also temporarily decreased risk weights on loans to the healthcare and pharmaceutical industry to stimulate lending.

When lockdowns were announced in Russia at the end of March, the Bank of Russia focused on preserving the smooth functioning of the financial system and on supporting lending activity. Most of our measures were of the regulatory forbearance type. We allowed banks to not reassess the financial standing of borrowers, freezing the requirement to make additional provisions for restructured loans until 30 September. This measure applied to credit to retail customers whose credit was restructured both according to the programmes, established by law, and to other banks' programmes; credit to small businesses; and credit to large businesses which, before the pandemic, were classified in the top or second quality group.

To encourage banks to sustain lending and to compensate for potential losses incurred by credit institutions due to a temporary decrease in interest income, we also released some of the macroprudential buffers. We fully released the macroprudential buffer on mortgage loans (worth \$1.7 billion) and later partly released the buffer on unsecured consumer loans (worth another \$2.2 billion). Macroprudential add-ons to risk weights for new mortgages and unsecured consumer loans were also reduced.

By the end of April, global financial markets had steadied and financial stability risks had eased. By that time, real time data pointed to a deep fall in economic activity. The immediate inflationary pass-through effects of a ruble depreciation and the one-off spike in demand for the most popular consumer staples in March proved to be limited at that point of time. They had almost no effect on inflation expectations against the backdrop of a large drop in consumer demand. Furthermore, the pandemic and lockdowns were expected to have disinflationary effects. Therefore, the Bank of Russia found it appropriate to resume and intensify monetary policy easing: its policy rate was decreased to the historically record low level of 4.25% by the end of summer.

Banking sector liquidity was another concern of the Bank of Russia in the second quarter of 2020. This concern had both monetary policy and financial stability implications. As in many other countries, demand for cash in Russia increased dramatically during first few months of the pandemic. The volume of cash in circulation increased by 1.7 trillion

rubles (\$22.7 billion) in the first half of 2020. As a result, the structural liquidity surplus in the banking sector decreased substantially. The government's intention to massively increase borrowing might have decreased structural liquidity surplus even further, albeit temporarily. Falling interest rates prompted depositors and banks to switch to shorter-term funding, while credit restructuring extended loan maturity on the asset side of the banking sector balance sheet. To address both of these problems, the Bank of Russia launched one-month and one-year repo facilities, decreased the costs of collateralised liquidity lines (used by systemic banks to comply with LCR requirements), and abolished individual ceilings for such lines for banks.

From the mid-summer of 2020, developing an exit strategy from some of the anti-crisis measures became the major task of the Bank of Russia. By that time, it had become clear that the pandemic would last longer than had been originally expected. Moreover, in many countries a second wave of the pandemic started in September. However, economies and societies adapted to the pandemic to a large extent. Global market volatility declined significantly as a result of supportive measures by major central banks and governments. A stress test conducted by the Bank of Russia showed that the Russian banking sector would be able to sustain stresses even under a severe scenario. The demand for credit restructuring was expected to increase during the potential second wave of the pandemic in Russia. Taking all this into consideration, the Bank of Russia decided to prolong beyond 30 September 2020 only those earlier regulatory forbearance measures that facilitated loan restructuring (until 1 April 2021 for large businesses and 1 July 2021 for SMEs and retail clients).

In the autumn of 2020, inflationary pressures intensified, including those related to the pass-through from the ruble depreciation. The growth of some goods prices accelerated either because of global commodity price increases or due to bad domestic crops and other supply bottlenecks. The support of the Russian government and the Bank of Russia to the economy spurred demand for many goods and services up to pre-pandemic levels, while supply was often lagging behind due to various local and global pandemic-related reasons. Although most of these effects were supply-driven rather than demand-driven, they prompted an increase in household one-year inflation expectations to 9.4% (as of September 2020). Under such circumstances, the Bank of Russia decided to assess wherever additional monetary policy accommodation was needed and took a pause in its policy rate reduction.

Later on, it became clear that the situation was changing even further. The economy adapted to the pandemic and demand continued to recover, supported by government stimulus and expenditure-switching effects from foreign travel to domestic consumption. Low deposit rates pushed consumers towards investing in financial markets and buying durables. At the same time, production and logistical bottlenecks prevented an adequate supply response. Inflation continued to increase. Therefore, the Bank of Russia started to raise interest rates in March 2021.

POLICY TRADE-OFFS IN EMERGING MARKETS AND LESSONS LEARNED

During the COVID-19 pandemic, the Bank of Russia's tactics were similar to those in other emerging markets in many respects. There were, however, very important differences. We started aggressive monetary policy easing later and stopped it at a higher interest rate level than many other central banks with similar inflation targets. Our FX operations were limited and rules-based and we have not made any asset purchases – just employed some additional liquidity operations. At the same time, we used regulatory forbearance to a larger extent than many other central banks, and we also started to exit the anti-crisis measures faster than most other central banks.

In the following section, I shall try to explain in more detail the rationale behind these policy choices and assess effectiveness of some of the measures.

Monetary policy easing and the effective lower bound

After a formal introduction of inflation targeting at the end of 2014, inflation in Russia was put in check. Average inflation in 2017–2019 was 3.9%, with an inflation target of 4%. This represents a significant disinflation from 8.2% in 2010–2016 and 12.7% in 2000–2010. The inflation targeting regime earned credibility among market participants – analysts' and markets' inflation expectations were anchored at the 4% target or slightly below. The inflation expectations of households and businesses decreased significantly, but were still relatively high, and, more importantly, unanchored.

In this situation, the Bank of Russia was able to conduct counter-cyclical monetary policy for the first time in modern Russian history. However, the proper sequencing of policy changes was the main challenge. We had to account for the impact of short-term inflation increases and exchange rate fluctuations on household and business expectations and behaviour. After years of high inflation, Russian households have become used to reacting to significant inflation spikes and exchange rate depreciations by increasing demand for durables and hard currency. This behaviour became much less pronounced in the recent years, due to a decline in inflation and in its sensitivity to the exchange rate. However, households' behaviour may still be an important factor that limits monetary policy space at times of high volatility and may push up the effective lower bound for the policy rate.

The effect of fiscal policy on demand and inflation was another factor that we considered in our policy discussion. At the onset of the Covid-19 crisis, at the time of the lockdowns, fiscal measures – in particular, social transfers to households and grants to businesses, and regulatory incentives to restructure loans – proved to be more effective tools to support demand in the Russian economy than monetary policy. However, accounting for lags in monetary policy transmission, monetary policy easing had to be started as early as possible to support economic recovery at a later stage, after the removal of tight lockdowns and at the time of fiscal policy normalisation.

Therefore, the Bank of Russia's monetary policy actions at the beginning of the pandemic were as follows. We kept the interest rate unchanged in March, to stabilise inflation expectations at a time of high market volatility. By the end of April, FX market pressures had subdued. Inflation pressures due to the ruble depreciation and the panic buying of storable consumer goods in March had subdued as well. Our assessment was that the effect on inflation expectations and household behaviour of short-term inflationary pressures was limited. Therefore, we started a monetary policy easing cycle. By the end of July, the key policy rate was decreased from 6% to 4.25%. Lending rates also decreased significantly following the decline in money market rates and long-term bond yields. This supported a fast economic recovery in the third quarter of 2020.

By the end of the third quarter, inflation pressures appeared. We considered these to be of a short-term nature. Compared to the first round in March, the second round of exchange rate depreciation triggered a more significant pass-through effect on prices against the backdrop of recovering demand. In addition, prices of some basic food products started to rise as well, largely due to increases in these prices on international markets. Household inflation expectations rose significantly. At the same time, deposit interest rates reached a record low level. As a result, households started to look for alternative means of savings: structural products, bonds and equities (including foreign ones), and investments in housing.

Under these circumstances, the Bank of Russia decided to take a pause in the policy easing cycle and wait until inflation expectations stabilised. However, economic recovery and inflationary pressures proved to be stronger than we originally expected. Therefore, our assessment as of the middle of February 2021 was that policy easing was over, and in March we increased the interest rate to 4.5%.

Overall, the important lesson from our experience is as follows. Our earlier efforts to earn policy credibility bore fruit. It was our improved credibility that allowed us to implement monetary policy easing during the Covid-19 crisis. Nonetheless, our policy space was more limited than many observers thought. Our effective lower bound for the policy rate proved to be much higher than zero because of still-high and unanchored inflation expectations of households and businesses. However, if we arrest inflation, which currently runs above our target again, and keep it close to the target for longer, this may widen our available policy space should another crisis occur.

FX operations versus regulatory forbearance of mark-to-market

While inflation targeting is a common monetary policy regime among the major emerging market central banks, their views on FX operations differ substantially. There is a group of more 'interventionist' central banks that believe that FX interventions help to increase monetary policy space and provide hedges to the economy in the situation of massive capital flows. Another group believes that, although FX interventions can be used for financial stability concerns, their use should be limited and well communicated. Otherwise, the

active use of such interventions could undermine the effectiveness of inflation targeting by provoking markets into thinking that the central bank tends to target the exchange rate rather than inflation. The IMF's Integrated Policy Framework attempts to identify the conditions under which one or another policy approach is appropriate.

The Russian approach is to consider FX operations separately from the monetary policy framework. As an oil-dependent country, Russia has a fiscal rule that, to a large extent, isolates the Russian economy and markets from oil price fluctuations. According to this rule, the Bank of Russia acts as a broker for the government, converting oil and gas windfall revenues into FX when the oil price is above a certain threshold (about \$43.3 per barrel in 2021) and selling an appropriate amount of FX when the oil price is below the threshold. In addition to this, at times of stress we use targeted exchange rate operations, usually in the form of FX swaps or repos, which provide FX liquidity to the banking sector. The Bank of Russia also reserves the right to amend the time schedule of FX purchases done in accordance with the fiscal rule if it is needed for financial stability purposes.

During the Covid-19 crisis, the main financial stability concern was the destabilising effect of the exceptionally low oil prices that were observed in March and April 2020. The fiscal rule helps to stabilise the real exchange rate when oil prices fluctuate. However, it works with a certain lag and it is less efficient at very low oil prices, when non-budget-related oil revenues decline significantly. Oil prices fell abruptly, reaching extremely low levels in March and April 2020. Thus, the Bank of Russia had to pre-emptively stop FX purchases and start FX sales in March using the formula that replicated the fiscal rule given the observed levels of oil prices.

Overall gross FX sales from March to December totalled \$23 billion, a small amount in comparison with the amounts of FX interventions which the Bank of Russia had carried out during the 2008–2009 and 2014 crises.

Our assessment prior to the Covid-19 crisis was that the Russian banking sector had ample FX liquidity. Therefore, in March we decided not to launch additional FX liquidity instruments, such as repos. At the same time, for precautionary purposes we decided to increase the limit of our stand-by FX swap operations from \$3 billion to \$5 billion. However, this instrument was not in demand by banks, in contrast to the previous crises, when FX liquidity had been a problem. This can be explained by the substantial de-dollarisation of the Russian economy and the banking sector and a light foreign debt payment schedule. The rapid stabilisation of global liquidity conditions was also a factor.

Overall, the key difference between the Bank of Russia FX operations and those of other emerging market central banks during the Covid-19 crisis is that the FX operations in Russia were relatively small and addressed the effects of oil price volatility rather than capital flow volatility. What can explain the success of the Russian approach? There are several hypotheses. First, the oil price volatility that we target is correlated with capital flows to Russia anyway. Second, Russian foreign debt is low by international standards,

so the size of capital outflows is relatively modest. (In March, a sell-off of government securities by foreign investors totalled \$3.5 billion, equal to 10% of the total holdings of non-residents.) Finally, regulatory forbearance measures that the Bank of Russia implemented in March 2020 prevented an asset fire sale by Russian financial institutions and even prompted them to purchase assets from foreigners at low price levels, thus stabilising the Russian financial markets. At the time of extreme volatility, the Bank of Russia allowed financial institutions not to mark assets on their balance sheets to market prices, but to use pre-stress fixed asset prices instead. In March 2020, a regulatory forbearance measure allowed banks and other financial institutions to use the ruble exchange rate and asset prices as of 1 March 2020. This decreased the sensitivity of bank balance sheets to market fluctuations and created additional capacity for banks to buy assets at low prices.

Asset purchases versus liquidity provision and special liquidity facilities

In contrast to many other emerging market central banks, the Bank of Russia decided that asset purchases were not justified during the Covid-19 crisis. Our reasoning was as follows. Inflation targeting in Russia was relatively new, so unconventional policy could have damaged the credibility of our monetary policy. Moreover, the Bank of Russia did not perform asset purchases as regular monetary policy operations. In our operational procedures, we used repo operations instead. Therefore, asset purchases could have confused the markets, undermining our credibility and provoking suspicion of fiscal dominance. Besides, due to the low level of government debt and cautious monetary policy at the onset of the Covid-19 crisis, the Russian bond yield curve, while moving up, still did not become outrageously steep by historical standards. Markets functioned smoothly, supported by the regulatory forbearance measures described above. The yield curve went down quickly once the period of extreme volatility ended. Therefore, asset purchases by the Bank of Russia were not justified for financial stability concerns. In Russia, extra Covid-19-related government debt issuance was purchased by local banks that were interested in floating-rate bonds for interest rate hedging.

Instead of asset purchases, the Bank of Russia provided special liquidity instruments to address the potential vulnerability of banks' liquidity amidst the increased volatility of government borrowing and spending and as demand for cash increased in the Russian economy. We launched monthly and annual repo auctions with a starting interest rate equal to our policy rate plus 0.10 percentage points and policy rate plus 0.25 percentage points, respectively. While initially the market suspected that these liquidity lines would be used for de-facto central bank financing of government debt, the actual use of these facilities was rather low and narrowly concentrated during the period of a temporary liquidity gap, when the government accumulated significant liquidity on its account at the central bank, not being technically ready to quickly spend it on budget appropriations. In addition, we decreased the costs of access to uncollateralised liquidity lines from 0.5% to 0.15% and abolished individual limits on these lines for banks.

Communication policy

The Bank of Russia considers communication to be an important monetary policy and financial stability tool. As far as monetary policy is concerned, the goal of our communication policy is to subdue market reactions to interest rate announcements and thereby smooth yield curve changes. Therefore, while making decisions on interest rates, we also signal our views on future policy to the markets. At the same time, we try to avoid an interpretation of our signals as commitments. We believe that such commitments can be counterproductive at a time of high volatility, and may even increase volatility of the yield curve. As far as financial stability is concerned, our main task is to improve market confidence. We modified our communication policy, making it more focused and intense in April and May 2020. The Governor of the Bank of Russia held regular weekly press conferences, where she provided our up-to-date assessment of the situation in the economy and in the financial system. She announced new support policy measures when it was necessary and shared monitoring data on the implementation of earlier measures, including on credit restructuring. The conferences were also accompanied by the publication of a weekly analytical review, *The Financial Pulse*, which contained all relevant information in a succinct format. These conferences played an important role in preserving the confidence of the market.

To better and more quickly assess the situation in the Russian economy, in addition to statistical data, we started using our new in-house index of financial flows to and from various industries based on real-time payment data. We have also been using the results of weekly company surveys conducted by our regional offices. This has helped to improve confidence in central bank policies as well as economic trends in general, and has had a positive impact on market stabilisation.

CONCLUSIONS AND CHALLENGES AHEAD

To sum up, Russia's policy response to the Covid-19 crisis and the financial sector reaction to it was different from previous crises. During 2008 and 2014 crises, monetary policy space and policy choices of the Bank of Russia were limited because of high household inflation expectations and the failure of a number of weak banks. Inflation targeting and a strengthening of the financial system through better supervision and the clean-up of the banking system of weak banks laid a foundation for a different policy response in 2020 in comparison to previous crises. The Bank of Russia was able to act counter-cyclically during the Covid-19 crisis and ease monetary policy. We complemented this by stimulating banks to restructure loans and increase their credit activity through regulatory forbearance and the release of macroprudential buffers.

In combination with the government support to the economy, our policy mix sustained credit activity, preventing a credit crunch. In the second half of the year, credit activity rebounded in all key market segments. The government's mortgage rate subsidy programme supported fast growth of new mortgages. Thanks to the programme and

overall low interest rates, the weighted average mortgage rate decreased by 1.7 percentage points to a record low of 7.3% since the beginning of 2020. Corporate credit grew by 9.9% last year, while SME credit grew by more than 20%.

The Covid-19 crisis showed that the policy framework set up in the last five to seven years in Russia was a key precondition for the ability to conduct counter-cyclical policies in 2020. This framework includes inflation targeting, a floating exchange rate and a well-developed set of financial stability instruments, as well as general measures to strengthen local financial markets. Budget policy should also get its due credit: Russia has one of the lowest government debt levels in the world and a budget rule that largely isolates the economy from oil price fluctuations. However, formidable new challenges lie ahead.

The recent acceleration in inflation has shown that rapid recovery of demand boosted by monetary and fiscal support can lead to a quick build-up of inflationary pressures and a sustained rise in inflation expectations. Supply disruptions and constraints facilitate this process. Thus, we need to find a proper balance between containment of price stability risks and the need to support further economic recovery when setting monetary policy in the near future.

The trade-off between financial stability and regulatory policies poses another challenge. We still need to ensure that the financial sector keeps operating smoothly and financing economic recovery. We have already started gradual withdrawal from temporary regulatory forbearance measures. We need to properly account for this effect in our monetary policy decisions and release some regulatory macroprudential buffers to support credit. In essence, we need to carefully balance short-term and long-term goals.

All of this means that the proper design of exit strategy and tactics is the key challenge for central banks and financial sector regulators in 2021.

ABOUT THE AUTHOR

Ksenia Yudaeva is the First Deputy Governor and Member of the Board of Directors of the Central Bank of the Russian Federation. As First Deputy Governor, Yudaeva is responsible for financial stability, research and statistics. She is also a member of the Monetary Policy Committee and Banking Supervision Committee of the Bank of Russia. One of her responsibilities is coordination of international activities of the Bank of Russia. In this capacity, she is a member of the Financial Stability Board Plenary and a number of Standing Committees, the Network for Greening the Financial System Plenary, the Committee on Global Financial System as well as a regular participant of the G20, BIS and IMF meetings. Previously, Yudaeva was the Russian G20 Sherpa and Chief of the Presidential Experts' Directorate at the Presidential Executive Office, Moscow. From 2008-2012, she was the Chief Economist of Sberbank. She has a Bachelor's degree from the Moscow State University, a Master's degree from NES, and PhD in Economics from the Massachusetts Institute of Technology.

CHAPTER 16

Weathering Covid: South Africa's central bank policy in 2020 and 2021

281

Christopher Loewald

South African Reserve Bank

INTRODUCTION

South Africa's policy response to the spread of the Covid-19 virus was rapid and robust, with economic activity and mobility measures enacted, fiscal support for incomes and a healthcare response, and aggressive easing of monetary policy. Complementary actions were taken to address financial market pricing dislocations and to provide support to borrowers. The monetary policy effort was made possible and effective, despite fragile macroeconomic conditions, by (1) direct, regular, and transparent policy communications; (2) pre-existing policy credibility; and (3) sticking to clear and sensible policy targets for all interventions and channels of policy, including with respect to coordination with fiscal policy. This chapter sets out and describes the primary monetary policy interventions used by the South African Reserve Bank (SARB) in addressing the crisis.

THE PANDEMIC SHOCK AND MACROECONOMIC CONDITIONS

The spread of the virus was exceptionally rapid. South Africa's first cases appeared in January of 2020 and, by 26 March, a stringent lockdown was implemented, ultimately resulting in a 51.7% contraction in economic activity in the second quarter. As lockdown restrictions were gradually lifted through the third quarter and companies adopted new approaches to dealing with the virus, economic activity accelerated rapidly, growing by 67.3% in that quarter and by another 6.3% in the fourth quarter. Going into the second quarter of 2021, some restrictions remain in place and most forecasts for 2021 output range from 3% to 4%.

From a supply perspective, the cessation of activity hit all sectors hard, with trade, tourism, construction, and services remaining far below 2019 levels through much of 2020 and into 2021.¹ Job losses were widespread and fell most heavily on less-skilled workers,

¹ This was especially true for activity in the primary and secondary sectors, such as mining (-72.0%) and manufacturing (-74.9%), but also for the tertiary sector, including transport (-69.4%) and trade (-67.6%).

although many firms implemented a subsidised furlough system, in contrast to events in the global financial crisis. The economy contracted by 7% in 2020 and unemployment rose to a record high of 32.5%.

The recovery has been faster than expected, but uneven across sectors and partial in the labour market. While 3.8 million individuals returned to the labour market by the fourth quarter, of these only about 900 000, or 24.0%, managed to find re-employment, leaving about 1.4 million jobs still missing relative to the first quarter of 2020. Job losses, decreased salaries, and mobility restrictions severely curtailed household spending, despite support from increased social transfers. As the lockdown eased and employment started to pick up in the second half of 2020, household consumption rebound strongly, supported by cheaper credit and pent-up demand. Consumption of durable goods was especially robust, while that of semi-durables remained significantly below the 2019 average. After weak gross fixed capital formation in 2019, investment fell sharply in 2020 by about 17%, contributing to deflated estimates of potential growth.

Global developments were unexpectedly more supportive as 2020 progressed. Supply constraints at a global level and the relatively rapid recovery in China helped push up international prices of many of South Africa's commodity exports, while weak expected global demand kept oil prices low. The combination generated strong gains in South Africa's terms of trade, and, alongside a collapse in demand for imports, caused a large trade surplus and a rise in gross national income. With less consumption and investment, household and corporate saving rose sharply, helping to finance a large expansion in deficit spending by the public sector.

The financing conditions facing the economy had deteriorated in the run-up to the crisis, as higher fiscal borrowing needs had generated a pre-existing rise in public debt and a steepening in the yield curve. Portfolio outflows from the SA bond market were particularly severe in March.² Despite the more precarious fiscal position, the fiscal response to the crisis was reasonably well targeted – at income support, PPE procurement and help for the public health sector – and funded in part through reprioritisations and in part fresh borrowing.

The deficit starting point, pre-pandemic, was however already high, at 6.8% of GDP, and increased during the year to 14.6% of GDP. Debt-service costs rose aggressively, in line with the larger borrowing need and sharply higher long-term yields. Yields on long-term sovereign bonds increased into March and then only very gradually eased over the course of 2020 as the economy's recovery became clearer and the treasury more easily tapped official financing and domestic capital markets.

2 Outflows reached \$3.39 billion, according to IIF Portfolio Tracker data, and accounted for more than 10% of total EM outflows (by contrast, outflows from SA equities were more muted at US\$1.02 billion, about 2% of the EM total)

Eventually, international financing returned, further easing conditions, and the currency strengthened back to pre-pandemic levels. Nonetheless, financing costs remain high, in part because the capital pool for financing the public sector had shrunk. Local banks increasingly bought sovereign debt, in part because they are the only widely available high-quality liquid asset to meet capital requirements and because alternative assets had become even riskier. Even with relaxed capital requirements, under the conditions of 2020, sovereign debt was the least risky loan to make. These dynamics, however, implied the rapid build-up of sovereign risk in bank balance sheets, increasing the sensitivity of financial institutions' balance sheets to debt prices going into the recovery.

By the close of the fiscal year in March 2021, the deficit for 2020/21 had eased to 12.3% due to the stronger than expected economic rebound, while the public debt profile looked somewhat better, at 89% of GDP. This was considerably better than the 95% level forecast at the time of the 2020 Budget.

South Africa's monetary policy response to the crisis has been extensive, involving 275 basis points in rate reductions (split between the March, April, and July Monetary Policy Committee, or MPC, meetings), additional liquidity injections in the money market, purchases of government bonds and loosening of regulatory regulations. I discuss these policy interventions in the remainder of this chapter.

THE MONETARY POLICY RESPONSE

South Africa's monetary policy response to the pandemic was shaped primarily by the clear disinflation that started in 2017 and by 2020 had opened up policy space, as well as by credible steps during the year towards a more determined fiscal consolidation.

As of July 2019, the repurchase (or 'repo') rate, the policy rate of the SARB, sat at 6.75%. In response to moderating inflation and weaker GDP growth, the repo rate was cut by 25 basis points, once in July 2019 and again in January of 2020. At the March 2020 meeting of the Banks' MPC, the repo rate was cut by 100 basis points. This was followed within two weeks by an emergency MPC meeting and a further cut of 100 basis points. The May and July meetings featured additional cuts of 50 and 25 basis points, respectively. The total easing of policy from July 2019 through to July 2020 was 325 basis points.

The March to July cuts were intended to sharply drive the level of the real repo rate below the estimated neutral real rate, which was itself being pulled lower by sharp cuts in G3 policy rates and expected contractions in global and local output. In contrast to estimates of neutral in advanced economies, however, South Africa's neutral rate remained elevated due to the large financing needs of the economy, a sharply higher sovereign risk profile, and depreciation of the currency (Loewald 2018). This implied that over the yield curve, while real short rates were now around zero, yields on longer maturities remained very positive – kept aloft by high public financing needs.

From July 2020 onwards, the repo rate remained steady at 3.5%, helping to lessen the contraction and support the recovery. Considerable analytical attention was applied from July to monitoring the recovery, risks to it, and how the economy absorbed the frontloaded repo rate cuts implemented earlier in the timeline of the pandemic. The policy response, while aggressive, also imparted stability to expectations of future economic activity with regular meetings, communications and public forecasts.

As key macroeconomic variables recovered from crisis lows, inflation remained muted and inflation expectations ticked lower, in line with the Bank's forecasts and active communications. Deflating imported goods prices helped disinflation and a broadly more supportive global environment strengthened the exchange rate of the rand. Headline inflation (3.3% for the year) further benefitted from subdued core inflation (weak housing price inflation and deflated labour market pressures) and fuel price deflation, while upside pressures came primarily from food and non-alcoholic beverages. These trends were sustained going into 2021, with January and February monthly outcomes coming out slightly below forecasts. The better economic data and contained inflation continued into this year.³

As noted above, more active policy communications played an important role in 2020, reinforcing a shift that started in 2017 towards a clearer articulation of a target preference within the broad band of South Africa's 3–6% inflation target. The 2014–2016 period saw inflation hovering around the 6% upper end of the target, presenting ongoing risks of abruptly higher interest rates and undermining the credibility of policy. To remove these risks, the preference for inflation to be at or around the 4.5% midpoint was communicated, creating a focal point to better anchor inflation expectations. While differences in the speed of convergence of expectations between business, analysts and trade unions remain, the overall effect was positive, with an easing of inflation in response to better communication.

The resulting low and stable inflation and enhanced policy credibility shaped the unprecedented easing from March, which sharply reduced the real cost of servicing debt and supported real purchasing power even as economic activity was drastically curtailed. Economic data for the second half of 2020 show how policy support fed through into activity levels. Households entered the crisis after a long period of deleveraging, with debt as a share of disposable income at just 71.5% in mid-2017. This created space for households to take on some new credit as borrowing costs fell. Total credit to households surpassed the 2019 level by December 2020, driven by secured credit (mainly property and vehicles).

3 Growth in the fourth quarter came out at 6.3%, well above the SARB's forecast of 5.3% and the Reuters median of 4.9%. Inflation for 2021 was revised higher to 4.3% (from 4.0% at the January meeting), driven mainly by fuel inflation as global oil prices recovered strongly.

Credit extension to the corporate sector followed a different pattern to that of households. Corporates frontloaded their credit needs early on, and credit surged by 5.4% month on month, in real terms, during March 2020 in the lead-up to the lockdown. Corporates then abruptly slowed their uptake of credit, hesitant to take on new debt as uncertainty spiked higher.

South Africa entered the crisis with pre-existing constraints to policy. Potential growth itself had deteriorated, implying less room for expansion. As importantly, fiscal policy was already fully extended. This fragile fiscal position could be unwound via some combination of looser monetary and financial conditions only if clear steps towards fiscal consolidation were taken alongside new spending for the pandemic. For this reason, fiscal and monetary coordination took a particular cast: reprioritising spending and new borrowing for the covid response, while taking concrete steps towards longer-term fiscal consolidation and, with the space already gained from disinflation, allowing greater monetary expansion.

This fragility of conditions – rocketing risk premia and declining investment – meant that, if credible, forward guidance could anchor expectations of future growth, but if managed poorly it could fatally undermine what remained of central bank and treasury credibility. While a range of commentators argued for direct financing of the public sector by the central bank, this was eschewed, in recognition of the severe risk to policy credibility, the temporary nature of the shock, the inflationary propensity of economic agents, and the real constraints to fiscal policy.

Perhaps the biggest beneficiary of the ultra-low short-term rates was the public sector, which shifted its funding to the shorter end of the yield curve. This reduced overall public sector funding costs as well as the effective interest rate on government debt to below 6%. By contrast, rates at longer maturities reached near 13% as higher risk lifted liquidity and term premia, before easing to around 10% later in the year. The ten-year government bond yield remained about 100 basis points higher in February 2021 compared to January 2020, notwithstanding the record-low short-term rates (Soobyah and Steenkamp 2020). Monetary policy transmission remained largely intact through the crisis, although the raised liquidity and term premia suggest reduced efficiency. The higher liquidity premium also reflected pricing dislocations in the secondary bond market and in money markets. Market volatility and pricing disruptions occurred primarily at the height of the crisis, roughly the period March to August, and might best be thought of as domestic freezing of funding. These freezes took several forms in 2020, as is discussed in the next section, alongside the policy measures taken to address them.

FINANCIAL MARKETS AND POLICY RESPONSES⁴

The start of the pandemic found South Africa in difficult circumstances, as the sovereign credit rating was reduced in March and the extended fiscal position looked at risk of further deterioration. Alongside extended currency depreciation of about 10% in March and high implied volatility, equity and bond markets recorded large outflows.⁵ Repo market spreads widened sharply, trading between 70 and 185 basis points. The Johannesburg Stock Exchange (JSE) lost about 30% of its value and the yield on the ten-year sovereign bond increased sharply.

The rise in risk aversion and sale of rand assets dried up liquidity and set up the conditions for further declines in prices and asset values, with potential for rapid destabilisation of the economy and financial instability. The Bank's aims were to stabilise markets and to ensure their orderly functioning, to indirectly reduce the risk of financial instability and to ensure the effectiveness of monetary policy by keeping market rates consistent with the repurchase rate. The Bank sought to ensure that buyers and sellers concluded transactions more easily, creating more certainty to facilitate 'price discovery' in the secondary bond market.

The Bank responded to the stress exhibited in the money markets with liquidity injections from March 2020 onwards, with the interventions falling away or being unwound in line with reduced need for them. Generally speaking, the interventions were successful, as measured by the gradual reduction in yields and a sustained period in which the three-month interbank money market rate hovered somewhat below the repo rate, suggesting excess liquidity levels.⁶

Domestic funding market strains were addressed through stepped-up repurchase operations. Intra-day repo auctions were initiated to support clearing banks, compared with the previous daily end-of-day auctions.⁷ With a rise in the liquidity demanded over the week, the main refinancing operations were increased in size. The Standing Facilities (SF) borrowing rate (the rate at which the SARB absorbs liquidity) was reduced to the repo rate less 200 basis points (from 100 basis points) to encourage flow of liquidity between market participants. In addition, the standing facility lending rate was reduced by 100 basis points to the repo rate.

4 See the 25 March 2020 media statement, "Further amendments to the money market liquidity management strategy of the South African Reserve Bank and additions to the Monetary Policy Portfolio", and the 31 July 2020 statement, "Enhancements to the South African Reserve Bank's open market operations" (www.resbank.co.za).

5 Of approximately ZAR 25 billion and ZAR 55 billion, respectively.

6 As seen in the bid-offer spreads of commercial banks' negotiable certificate of deposit (NCD), which returned to pre-crisis levels as early as May. The three-month Johannesburg Interbank Average Rate (Jibar) dipped below the official policy rate between mid-August and late December.

7 Intraday Overnight Supplementary Repurchase Operations (IOSROs), twice daily at 10:00 and 13:00 (except on Wednesdays). IOSROs will be carried out through a fixed-rate auction with a pro-rata allotment, with an interest rate that is equal to the repo rate. The amount on offer will be decided on the day in line with the prevailing money market liquidity conditions. The end-of-day supplementary facilities will no longer be offered.

The Bank conducted purchases of sovereign bonds in the secondary market to resolve price dislocations from late March 2020, buying ZAR 41 billion (roughly 1% of GDP) from April to November. The bonds purchased formed a Monetary Policy Portfolio (MPP) that could be used to drain or inject liquidity through outright sales and purchases of bonds, alongside other instruments.

From 3 August 2020, additional measures were implemented to enhance the SARB's ability to manage money market liquidity conditions. These included the increased issuance of Bank debentures and long-term reverse repurchase agreements in competitive multiple-price auctions, where bidders are allotted at their bid yields if the bid yields are lower or equal to the cut-off yield.⁸ On a bilateral basis, the Bank commenced short-term buy/sell-backs, of up to one month, with commercial banks to assist them with money market liquidity pressures.

The approach of the Bank has been to reduce dysfunctionality in the market rather than to determine prices, using interventions to inject liquidity into the market and ensure its smooth functioning, rather than for economic stimulus purposes. These actions did result in price movements as demand and supply come into alignment, but this was not an explicit objective. Unlike the purchase of long-dated bonds and concomitant rise in reserves of commercial banks at central bank accounts, policy focused on facilitating a return to price discovery between buyers and sellers in the market. At the same time, lower interest rates brought down the front-end of the yield curve, giving space for the fiscal authorities to issue more debt at lower cost should they choose to do so (as discussed earlier).

As 2020 wore on, other market stresses emerged, in particular a rise in the cost of borrowing rand in the forward market, which had the potential to limit offshore purchases of rand-denominated securities. While the proximate causes of this dysfunction are several, accessing more foreign currency borrowing may have indirectly contributed to the problem in two ways. First, the initial tranche of foreign currency borrowing generated the expectation of potentially further borrowing and appreciation of the rand to the US dollar.⁹ And second, while the Bank conducted a typical sterilisation of the inflows, the rand sourced for the Treasury effectively wasn't expended and deposits at banks failed to flow into the forward rand market. At the same time, the stronger terms of trade and collapse in import demand resulted in higher income flows and a build-up of foreign currency holdings in corporate accounts. In short, the markets ended up over-supplied with US dollars and appreciation of the rand was expected, limiting demand for more dollars.

8 In the past, the cut-off yield was capped at the prevailing repo rate. Going forward, greater flexibility will be applied by allotting below and above the repo rate. The allocation decision will be made at the discretion of the SARB, taking into consideration the prevailing money market liquidity conditions as well as other tools at its disposal. The tenors will remain unchanged, at 7 days, 14 days, 28 days and 56 days.

9 The market perceived a policy corner being turned, with the fiscal authorities now predisposed to further foreign currency borrowing from official lenders, lending weight to speculation that the rand would strengthen in coming months.

To address these distortions, the SARB injected rand liquidity into the forward market, focusing on month-end periods when distortions were largest. These injections were ramped up in December 2020 and January 2021, after smaller interventions in September and November 2020.¹⁰

The various market interventions were gradually unwound as conditions started to normalise. Specifically, the SF interest rates were adjusted to their standard levels in mid-August 2020 (100 basis points either side of the repo rate). The three-month term repo facility and the IOSROs were discontinued in December 2020 and February 2021 respectively, and the main Wednesday repurchase auction amount reverted to ZAR 56 billion in February 2021.

MACROPRUDENTIAL ADJUSTMENTS

From a macroprudential perspective, the financial system entered the crisis in good shape, with high capital ratios in place and ending a period of modest growth in lending to households and corporates. A long process of household deleveraging away from high debt-to-income ratios at the time of the global financial crisis had largely been completed by about 2017 and lending had picked up, albeit still at historically moderate levels. South African financial institutions lean toward risk aversion generally, implying that banks tend to hold more capital than is required by regulation, and this was evident in the run-up to the crisis. As a result, the policy approach broadly entailed enhanced monitoring of banks' business continuity planning, daily assessment of liquidity and other data readings, and close monitoring at a microprudential level of the evolution of non-performing loans, credit loss events, stress in markets and business loan defaults.

The South African banking system is generally resilient to financial stress, enabling banks to work closely with borrowers to restructure debt.¹¹ This process was supplemented by the creation of a loan guarantee scheme with the treasury, although this was tapped by relatively few banks and corporates. Regulatory relief measures adopted by the Prudential Authority centred on capital relief on restructured loans in good standing prior to the pandemic, lowering the liquidity coverage ratio (from 100% to 80%) and other capital requirements.¹² Guidance was further provided by the Prudential Authority to

10 Injecting further rand liquidity into the market, however, reduces the money market shortage. This was avoided by using short-term liquidity injections, especially around the end of the month, when they are offset by a higher demand for notes and coins (which expands the shortage). The Bank also matured some of its swaps, returning rand liquidity to the forward market.

11 See the Prudential Authority press release of 6 April 2020 on regulatory relief measures and guidance to the banking sector in response to COVID-19.

12 The Prudential Authority temporarily amended Directive 7 of 2015 on Restructured Exposures so that, for the duration of the crisis, loans restructured (households, small- and medium-sized businesses and corporates, and for specialized lending) as a result of the impact of COVID-19 will not attract a higher capital charge. The Pillar 2A capital buffer, which is set at 1% of risk-weighted assets, was set at zero. The Prudential Authority also provided clear criteria that provide for banks to dip into their capital conservation buffer, which is set at 2.5% of risk-weighted assets.

conserve dividend pay-outs. Broadly speaking, the banking sector's prudent approach to leverage and a partnership-based approach to microprudential regulation prepared the sector well for the shock of the pandemic.

CONCLUSION: MONETARY AND FINANCIAL POLICIES INTO RECOVERY

Ultimately, adaptation by firms and households, accommodative policy and vaccinations will work together to strengthen economic recovery, both globally and in South Africa. None of these, however, works rapidly enough to allay economic damage. Instead, recovery takes time, and this working out over time can be seen in South Africa's experience with concerted monetary policy actions.

The Bank's approach to policy – cutting aggressively and then waiting to see how policy filtered into decisions of economic agents – suggests the value of being clear about policy intentions and targets. Monetary and fiscal coordination provided a sound message about policy: raise finance, consolidate where needed and loosen where policy space existed. This coordination in turn helped keep the country's overall potential financing options open and 'onside'. The two are linked – the better domestic and foreign funders understand policymakers' intentions, the easier and cheaper the access to funding, even under intense stress and unfavourable developments and conditions.

Clarity through a crisis also bolsters credibility, enabling policymakers to take on new challenges, so long as the revised targets remain sustainable and time-consistent. In retrospect, this seems paramount. The latitude with which the Bank was able to use monetary policy space and less conventional tools depended not on untested theoretical assertions, but entirely on having established policy credibility. Time-consistency of policy kept funders in the market: the bond purchase policy was not intended to pay investors less than fundamentals would warrant (financial repression) or open the door to monetising public debt, but neither did it set up a one-way bet, allowing creditors to exit assets at little cost.

The utility of the Bank's approach to policy can be measured in outcomes – by the evolution of borrowing costs, macro variables like the exchange rate, and the sustained moderation of the inflation rate, all in the context of exceptionally difficult circumstances and a deteriorated starting position as of March 2020. Like many other central banks, both in advanced and emerging economies, early and aggressive rate cuts provided extensive support before shifting to a 'wait-and-see' approach to see how reduced rates affected the economy. With inflationary pressures remaining well-contained, rates have been kept low for longer in South Africa. In countries where these metrics deteriorated too far, capital flow and rates fallout emerged rapidly in response to possible global policy normalisation.

The recovery process will continue to test emerging economies' policy frameworks. Less positive outcomes, such as sustained deficits, weak growth and stalling exports, could induce policymakers into poor choices. Among the larger risks are taking steps that weaken local currency and capital markets in favour of greater foreign currency financing, engaging in financial repression, and/or blurring the lines between fiscal and monetary policy actions. Any of these would place severe pressure on emerging market macroeconomic frameworks and reduce fiscal and monetary policy space.

Instead, economic gains appear clear from entrenching lower inflation in South Africa, protecting the competitiveness of producers in a world of diminished inflation and raising the prospect of South African borrowing costs permanently anchored at or near current historically low levels.

REFERENCES

Loewald, C (2018), "Making sense of neutral real interest rates," Occasional Bulletin of Economic Notes, South African Reserve Bank, November.

Soobyah, L and D Steenkamp (2020), "Term premium and rate expectation estimates from the South African yield curve", South African Reserve Bank Working Paper Series No. WP/20/03, June.

ABOUT THE AUTHOR

Chris Loewald is the Head of Economic Research and Chief Economist at the South African Reserve Bank (SARB), responsible for monetary policy, research, forecasting, global economic analysis, and the writing of the Monetary Policy Review. He is a member of the Monetary Policy and Financial Stability committees. Prior to joining the Bank in 2011, he spent 13 years in the South African National Treasury in various senior policy roles, including Acting Head of the Budget Office in 2005 and 2006 and Deputy Director-General for Economic Policy from 2006 to 2011.

ANNEX: POLICY CHRONOLOGY

	Repo rate change	Repo level	Secondary bond purchases	Money market injections and repo market	Other policy changes
March 2020	100 bps	5.75%	Bond purchases begin	..	..
April 2020	100 bps	4.75%	Bond purchases ramp up	Standing Facilities borrowing rate reduced to repo less 200 bps Standing facility lending rate reduced by 100 bps to repo rate Intraday repos initiated.	Loan Guarantee Scheme Leverage coverage ratio reduced Pillar 2a reduced Restructured loans eased Dividends guidance
May 2020	50 bps	3.75%	Bond purchases continue	3-month term repo facility introduced	..
July 2020	25 bps	3.50%	Bond purchases ease sharply	..	..
August 2020	..	..	Minor bond purchases	SF rates to standard levels (100 bps either side of the repo rate).	..
December 2020 to January 2021	..	..	..	3-month term repo facility and intraday repos discontinued. Month-end injections of rand liquidity in forward market.	..
February 2021	..	..	..	Wednesday repurchase auction amount reverts to R56 billion (normal level).	..

CHAPTER 17

Monetary policy in the Covid era: The Turkish experience

Hakan Kara

Bilkent University

The Covid era brought unprecedented challenges for policymakers in emerging market economies (EMEs). EMEs not only saw their real economic activities collapse but also faced substantial portfolio outflows and wider spreads due to heightened risk aversion when the pandemic hit around the globe (IMF 2020). This was a complex mixture of supply and demand shocks that necessitated a different policy approach than previous global shocks. Although advanced economies had widespread experience with quantitative easing after the 2008–09 global financial crisis, most emerging markets had little experience with such policies until recently (Drakopoulos et al. 2020). During the Covid period, with the urgency of a strong policy response, central banks of emerging market economies have resorted to various forms of quantitative easing and liquidity policies to avoid an inefficient tightening in their financial conditions due to capital outflows and sharply rising public financing needs.

Covid-19 hit the Turkish economy synchronously with the European economies. Following the outbreak of the coronavirus across the globe, the lockdowns started by mid-March. Turkey's growth rate weakened sharply through the impact on foreign trade, tourism, and confidence. Accordingly, industrial production contracted by around 30% in April 2020. As the impact of the pandemic deepened, economic activity almost came to a standstill in many sectors. Corporate cash flows have deteriorated due to declining sales and rising precautionary demand for liquidity. Having to face this period with an already high unemployment rate increased the urgency of implementing strong policy measures.

The initial response of the Central Bank of the Republic of Turkey (CBRT) and the government authorities was similar to the policies implemented elsewhere in the world: comprehensive credit and liquidity easing and adopting measures to contain the adverse impacts of the pandemic on financial conditions. The monetary easing strategy during the pandemic not only included direct bond purchases and targeted liquidity facilities by the CBRT, but also involved substantial injections of credit through public banks at the later stage. These efforts were complemented by the intensive use of foreign exchange reserves through discrete interventions to prop up the depreciation pressures on the domestic currency.

With chronically high inflation and large external financing needs, Turkey faced more intensive policy challenges during the pandemic period. Unlike most EMEs, Turkey was struggling with high inflation when Covid-19 hit. CPI inflation had been already hovering at double digits and inflation expectations had persistently moved away from target, especially during the preceding three years. Moreover, sizeable short-term FX-denominated liabilities further worsened the trade-offs amid weak global risk sentiment. Weakly anchored expectations and the interaction between exchange rates, capital flows, and inflation expectations have made it challenging to implement strong monetary easing when it was needed most.

At the onset of the pandemic, the initial design of the targeted liquidity facilities by the CBRT was in line with best practices, aiming to avoid a disruption to the financial system and to support the most distressed segments of the economy, such as small and medium-sized enterprises (SMEs) and exporting firms. This approach was instrumental in containing the downside risks to credit markets and to economic activity during the initial stages of the stimulus. However, as time passed, excessive monetary and credit easing, coupled with the massive scale of FX interventions, brought significant adverse effects. Higher inflation and a larger current account deficit soon kicked in and the substantial loss in central bank international reserves led to heightened risk aversion. The inability of the CBRT to make outright monetary tightening due to political influence has further undermined investor confidence, leading to a vicious cycle down the road. Faced with the possibility of a balance of payments problem, the authorities eventually had to reverse this strategy in November 2020 and revert to a more conventional approach to contain macro financial risks.

This chapter provides a narrative of the monetary-financial strategy adopted by the Turkish authorities during the pandemic period, assesses the outcomes, and draws some lessons and policy implications. The first section explains the conventional and unconventional policy tools. Next, the impact of these policies on the macroeconomy is evaluated. The final part draws some lessons from the whole experience.

BOND PURCHASES AND LIQUIDITY POLICY

The CBRT has a tradition of pre-announcing annual bond purchase plan via its annual monetary and exchange rate policy report published each December. The main motivation for the CBRT holding a bond portfolio is to maintain the flexibility to conduct open market operations. The size of net bond purchases acquired through this mechanism has been negligible during the past two decades. In other words, the CBRT has not engaged in ‘quantitative easing’ in its recent history.

Following the Covid-19 shock, the government coordinated a spending programme that has been partly backed by bond purchases of the central bank. The CBRT initially frontloaded the pre-announced purchases of government securities and then launched a new bond purchase programme, which was essentially the first quantitative easing

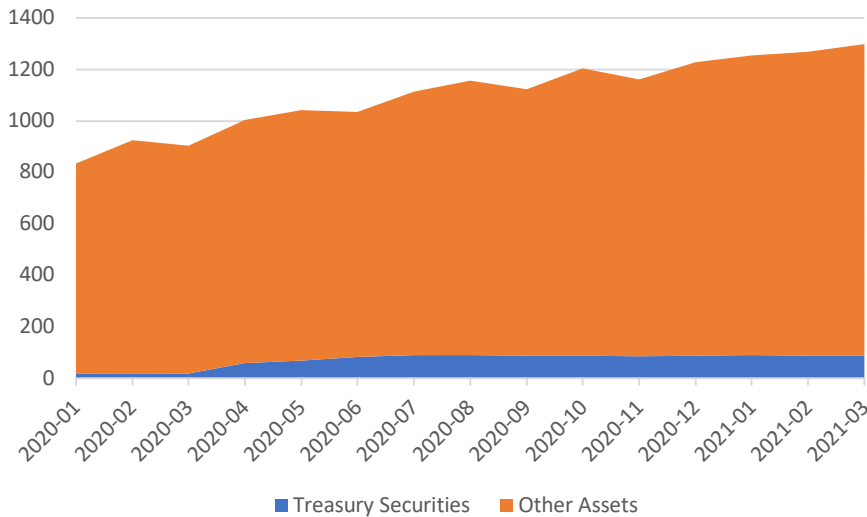
attempt by the central bank in decades. The aim was to boost the liquidity in the government securities market and to relieve the potential pressure on bond yields due to a heavy Treasury borrowing schedule driven by extraordinary conditions. To this end, the upper limit for the central bank bond purchases was lifted to 10% of the size of the CBRT's balance sheet. This limit was further stretched by creating exceptions through indirect bond purchases from other public institutions, such as the unemployment insurance fund.¹ Repo funding for primary dealers was made more flexible to support banks' purchases of government bonds. With the opening of the economies and the consequent recovery in the economic activity by mid-2020, total holdings of Treasury securities have been stabilised at 8% of the size of the CBRT's balance sheet (Figure 1).

Besides the bond purchase programme, the CBRT has also taken a series of targeted liquidity measures to support the flow of credit, cash flows, and the smooth functioning of the financial markets (CBRT 2020). The collateral pool was broadened to facilitate liquidity provision by including asset-based and mortgage-based securities. Limits for swaps – where the central bank receives foreign currency in return for reserve money – were expanded. Reserve requirements were reduced to incentivise bank lending.

To augment the smooth functioning of the credit mechanisms, targeted liquidity schemes were launched. These facilities partly aimed at providing funds to the banking system at lower cost and longer maturities to mitigate the tightening in credit spreads. Some of these mechanisms were designed as a funding-for-lending type of scheme, whereby the bank liquidity provision was directly linked to the size of the loans extended to enterprises suffering from the outbreak, such as exporting firms. On some occasions, central bank funding was conditioned on firms maintaining their employment levels or using the associated loans for capital expenditures. As a result of these efforts, the central bank balance sheet expanded rapidly in 2020 by almost 50% after the onset of the pandemic (Figure 1).

1 See Table 1 in the Appendix for a more detailed list of facilities introduced during the Covid period.

FIGURE 1 CBRT ASSET SIZE AND THE CONTRIBUTION OF BOND PURCHASES (BILLION LIRA)



Source: CBRT

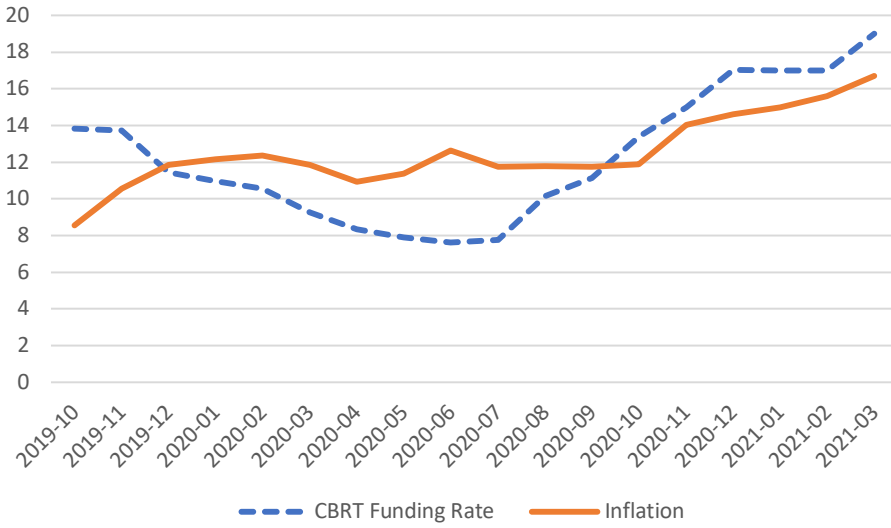
INTEREST RATE POLICY

Central banks coping with the zero lower bound problem during the pandemic have resorted to unconventional policies such as quantitative easing and/or forward guidance to ease monetary and financial conditions. Turkey did not face such a constraint due to high inflation, which created significant room for monetary stimulus via conventional policy rate cuts. During the peak of the pandemic, between February and May 2020, the CBRT cut the main policy rate, the one week repurchase auction rate, by 250 basis points in three consecutive steps, bringing the key policy rate down to 8.25%.

As described in the previous section, the CBRT also introduced additional low-cost liquidity facilities in the form of swaps and repos, which were extended at an interest rate of 100–150 basis points below the main policy rate to support targeted lending schemes and to contain the widening in credit spreads. With the contribution of low-cost funding and outright rate cuts, the effective funding rate of the CBRT declined from 11% in January to 7.5% by July 2020 (Figure 2).

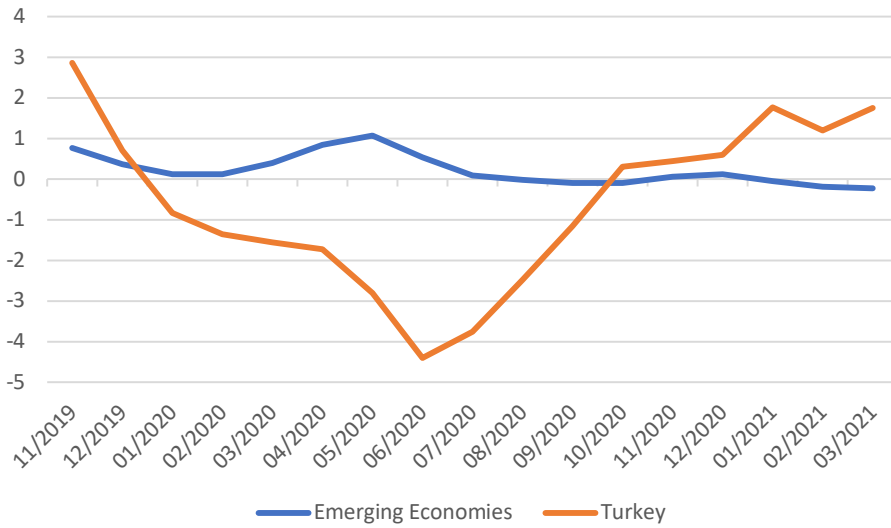
As inflation remained at elevated levels, reaching 12.6% in June, the policy easing moved the real policy rate into deeply negative territory. Despite the higher country risk premium, the real interest rate measure in Turkey (using the effective funding rate and the latest inflation figure) dropped to -4.5% by mid-2020, which was significantly lower than the average across emerging market economies (Figure 3). These ultra-low real rates, interacting with the credit boost fuelled by public banks, sowed the seeds of the sizable macro imbalances at the later stage of the pandemic.

FIGURE 2 CBRT EFFECTIVE FUNDING RATE AND CPI INFLATION (%)



Source: CBRT

FIGURE 3 REAL POLICY RATES (USING REALISED INFLATION, %)



CREDIT AND BALANCE SHEET POLICIES BY THE OTHER AUTHORITIES

Monetary policy is largely transmitted through bank credit in Turkey. Understanding the regulatory and administrative changes affecting the behaviour of the banks and the broad supply of credit is crucial to assess the overall measures taken during the Covid era. In case of Turkey, bank regulation is conducted outside the central bank. The Banking Regulation and Supervision Agency (BRSA) is the main institution overseeing the banks. At the onset of the pandemic, the BRSA took several measures to alleviate distress on bank balance sheets. Forbearance measures were introduced to avoid possible capital shortfalls due to volatility in asset prices and the deterioration in cash flows. To this end, the duration for banks' threshold payment deferral for the classification of non-performing loans was doubled from 90 days to 180 days. The banking regulator has suspended the mark-to-market valuation of FX-denominated assets and fixed-income securities to smooth the fluctuations in bank capital (see Table 2 in the Appendix). Furthermore, caps on minimum credit card payments and loan-to-value ratios have been relaxed to avoid an undesirable tightening in financial conditions.

Traditionally, Turkish government institutions have been active in the credit market through public banks, regulatory measures, and loan guarantees. Having used such tools in the past, the authorities were quick to utilise the public banks and the credit guarantee fund to boost loan supply during the Covid era. The capital base of public banks was bolstered through direct equity injection by the Treasury. Loan guarantees and subsidies were used to support the credit market. These measures enabled public banks to expand their loan books rapidly. As a consequence, the stock of credit extended by the banking system increased sharply in a short period following the onset of the pandemic (Figure 4).

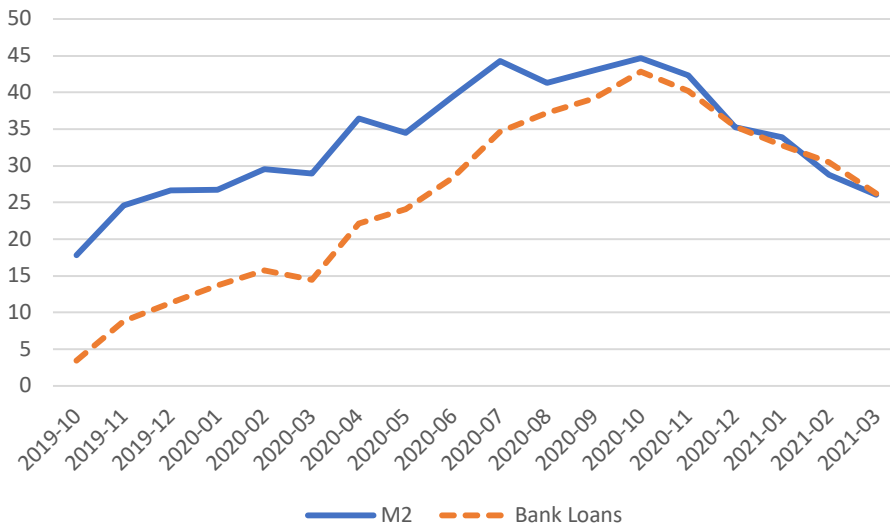
However, private banks were initially reluctant to expand their loan books, as they were in a phase of repairing balance sheets from the past currency crisis. In response, the authorities imposed an unconventional novel rule on banks, called the 'asset ratio'. This rule practically induced banks to either extend more loans or to make more purchases of government bonds or engage in swap transactions with the CBRT. The rule was controversial as it essentially motivated banks to take more risks in an already uncertain environment, which was at odds with the prudent approach adopted under normal conditions.

These efforts by the government authorities and the banking regulator were complemented by the CBRT's reserve requirement policy. In order to counteract the procyclical behaviour of private banks, the CBRT had used reserve requirements as an additional instrument to encourage bank lending before the pandemic. The idea was to create an incentive scheme whereby banks with loan growth rates above a certain threshold were granted higher remuneration rates and lower reserve requirement ratios. During the pandemic, the CBRT has taken further steps in this direction by cutting the FX reserve requirements

for banks conditional on credit growth. However, the constraints based on credit growth shortly became non-binding, as the banks quickly expanded their loan books with the other incentives provided by the authorities.

The carrot-and-stick approach of the asset ratio rule, the substantial boost in public banks' credit supply, and the vigorous loan demand driven by historically low real rates have fuelled credit growth and the broad money supply at an unprecedented pace. Accordingly, the annual rate of loan growth, which was 11% in 2019, reached 35% by the end of 2020 (Figure 4). The growth rate in broad money supply indicators also climbed to 35% during this period.

FIGURE 4 ANNUAL GROWTH IN MONEY AND CREDIT (%)



Source: CBRT

MACROECONOMIC IMPACT OF THE POLICY RESPONSE

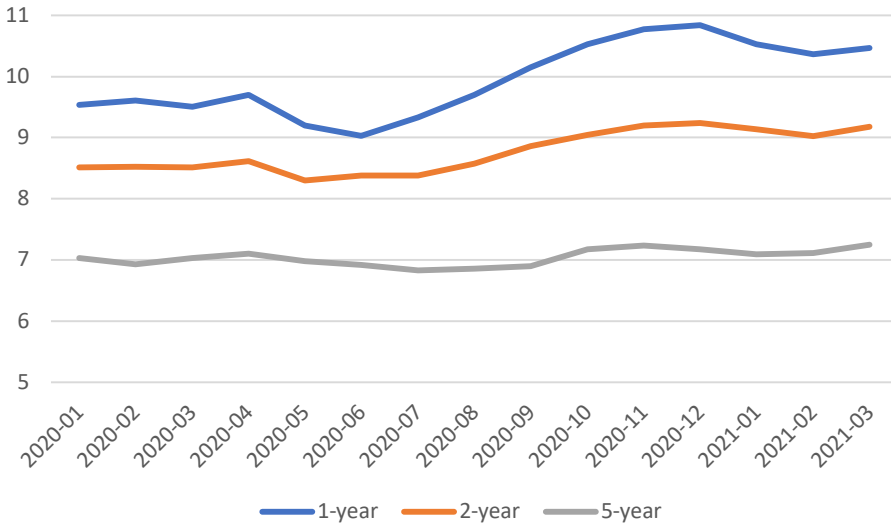
Unlike the rest of the G20 countries and major EMEs, the Turkish authorities relied mostly on credit expansion rather than direct fiscal transfers to support the economic activity during the initial stages of the Covid era (IMF 2020). In that sense, Turkey became an outlier in terms of the design and composition of pandemic-related relief packages. The sizeable expansion in credit and money supply, coupled with the historically low real rates, stimulated domestic demand in a short period of time. After a brief collapse during the initial stages of the pandemic, consumption expenditures recovered swiftly and grew by 8.4% in the second half of 2020, becoming the main driver of economic activity. As a consequence, with a growth rate of 1.8% for the whole year, Turkey was one of the two G20 countries (along with China) that posted positive GDP growth in the year of the pandemic.

Nevertheless, excessive monetary and credit expansion came with its costs, bringing vulnerabilities through internal and external imbalances. Although the CBRT started unwinding the liquidity facilities and raising reserve requirements by mid-2020, bank credit continued to grow rapidly with the lasting impact of the asset ratio rule, credit guarantee fund-driven loans, and the low real rates.

One of the most visible side effects of the rapid credit growth was heightened inflationary pressures. With a weak track record of missing inflation targets by large margins during the previous decade, inflation expectations were already far from anchored when Turkey was hit by the Covid shock (Gülşen and Kara 2021). The sizeable credit growth and historically low real rates have further worsened inflation expectations (Figure 5). Moreover, the adoption of controversial rules attempting to micro-manage the bank balance sheets, coupled with discretionary capital flow management rules such as restrictions on off-shore swap transactions, has created concerns among international and domestic investors. Together, these developments fuelled capital outflows and speeded up local agents' demand for foreign currency, leading to weakening pressures on the domestic currency. The consequent sharp depreciation of the Turkish lira started to pass through to inflation and inflation expectations. More recently, the recovery in global commodity prices and the vigorous domestic demand driven by easy credit have further added to inflationary pressures. As a consequence, annual CPI inflation climbed from 11.9% in March to 15.6% by end-2020 (Figure 2).

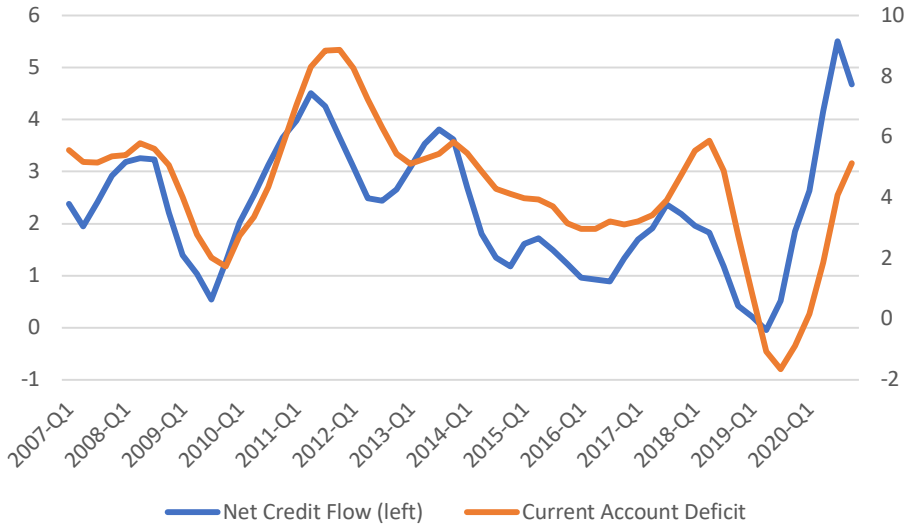
An important adverse effect of the substantial credit expansion was the widening current account deficit. Historically, variations in the Turkish current account deficit have been largely driven by bank credit cycles (CBRT 2021). As domestic expenditures quickly surged with easy credit and money, imports have displayed a sharp increase (Figure 6). Besides the credit growth, external balances have also taken a hit from the collapse in tourism revenues due to Covid-related travel constraints. As a consequence, the current account balance deteriorated sharply to a deficit of 5.1% of GDP by the end of 2020 (from a small surplus in 2019), making Turkey an outlier among emerging economies.

FIGURE 5 INFLATION EXPECTATIONS (CBRT EXPECTATIONS SURVEY, MEAN)



Source: CBRT.

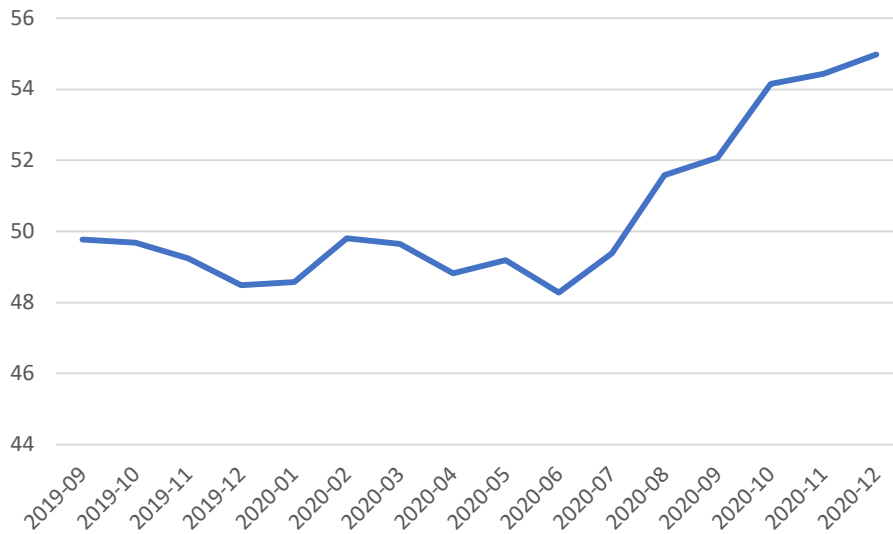
FIGURE 6 CURRENT ACCOUNT DEFICIT AND NET ANNUAL FLOW OF CREDIT (% OF GDP)



Source: CBRT and BRSA.

Another major cost of the post-Covid monetary and financial policies was the increase in deposit dollarisation – i.e. the tendency for domestic agents to hold foreign-denominated deposits rather than Turkish lira assets. As expectations for inflation and exchange rate depreciation have been revised on the upside and the Turkish lira real deposit rates fell to deeply negative levels, residents have increasingly switched to foreign currency deposits to protect their purchasing power. The share of domestic residents' foreign currency-denominated deposits in total bank deposits rose from 48.5% in 2019 to 55% by the end of 2020 (Figure 7). Higher current account deficit, dollarisation of local deposits, and weakened capital flows have intensified the demand for hard currency and exerted further depreciation pressures on the Turkish lira.

FIGURE 7 DOLLARISATION RATIO (RESIDENTS' FX DEPOSITS AS A SHARE OF TOTAL DEPOSITS)



Source: CBRT.

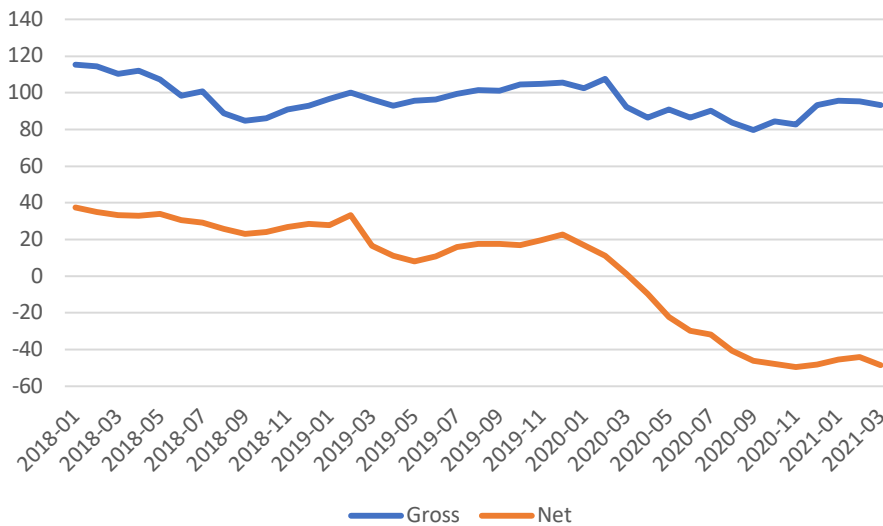
International investors' appetite for Turkish assets has also declined considerably during this process. Turkey has seen significant portfolio outflows due to the deterioration in inflation expectations, heightened uncertainty, and expected depreciation in the domestic currency. As foreign investors became more reluctant to hold long positions in Turkish lira, depreciation pressures on the lira intensified. The authorities responded by selling the CBRT's international reserves to contain the depreciation of the lira, which led to a sharp decline in net FX reserves.

Turkey used FX interventions intensively during the Covid period to 'lean against the wind'. The interventions were conducted through a non-transparent scheme whereby central bank international reserves were sold to the public banks (through some opaque mechanism), which, in turn, made their way back to the CBRT through cross-currency swaps. This scheme has allowed the banks to meet the demand of locals and foreign

investors for hard currencies without creating FX open positions. The net effect of this operation on official international reserve holdings, *ceteris paribus*, was unchanged gross foreign reserves of the central bank, while net reserves declined considerably once the swaps are excluded. Meanwhile, the authorities were also engaged in cross-currency swap agreements with Qatar and China to mitigate the fall in international reserves.

Although the size and the timing of the interventions were not announced officially, the total amount of foreign reserves sold through this mechanism can be backed out by reverse engineering through the CBRT balance sheet items. Such calculations suggest that the total sales (excluding valuation effects) may have reached as high as \$86 billion in 2020. This peculiar style of intervention strategy continued until November 2020, when the central bank governor and the Minister of Finance and Treasury were removed from their offices by presidential decree. As a consequence, the CBRT's net FX position moved into deeply negative territory (Figure 8).

FIGURE 8 CBRT INTERNATIONAL RESERVES (BILLION US DOLLARS)

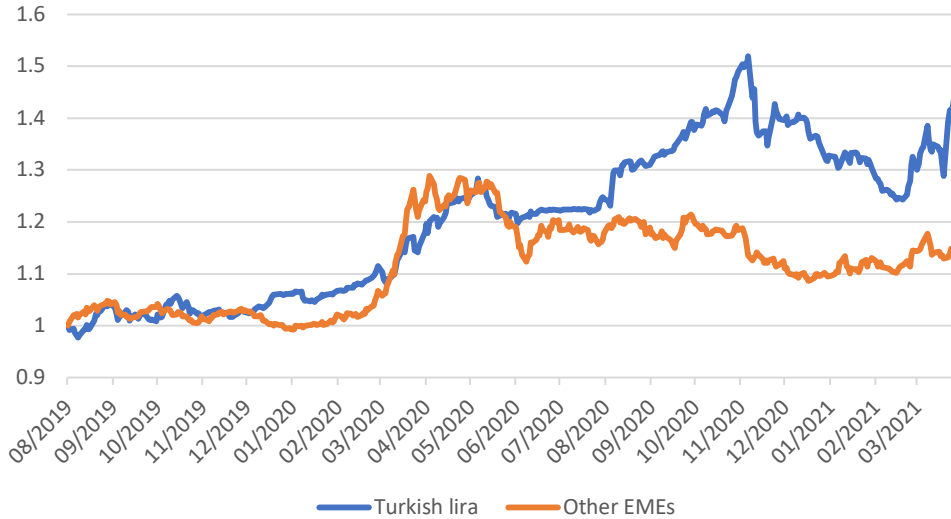


Source: CBRT.

During the initial stages, FX interventions managed to stabilise the currency to some extent. Nevertheless, the strategy of using CBRT foreign assets to counteract currency pressures has backfired as domestic and foreign investors started noticing the substantial erosion in international reserves. Together with the sizeable external financing requirements due to short-term debt and the current account deficit, concerns over reserve adequacy and the sustainability of the balance of payments accounts have been increasingly highlighted by international institutions. With investors increasingly closing their Turkish lira long positions and domestic agents switching to dollar and gold deposits, the depreciation–inflation spiral took off. The whole scheme turned into

a vicious cycle with higher risk, more depreciation, and weaker external buffers. These developments have led to a marked divergence of the Turkish lira from peer currencies (Figure 8) starting from mid-2020 (Figure 9).

FIGURE 9 TURKISH LIRA AND PEER* CURRENCIES TO THE US DOLLAR
(JANUARY 2ND, 2020 = 1)

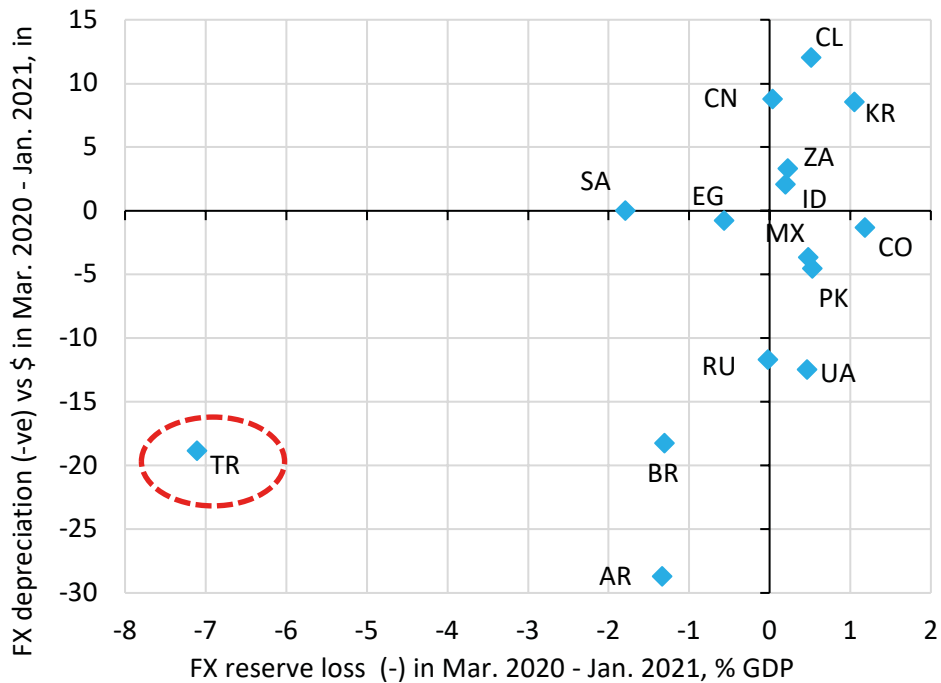


Note: *Other EMEs are Brazil, S. Africa, Mexico, Indonesia.

Source: Bloomberg.

To be fair, Turkey was not alone in facing sharp currency movements during this period. After the onset of Covid-19, other emerging market economies such as Brazil and Argentina also experienced sizeable depreciation pressures on their currencies. Yet, Turkey was unique in its foreign reserves falling way more than any other peer EMEs but at the same time having a significant currency depreciation (Figure 10). The bottom line is that selling FX reserves did not protect the currency when the monetary and financial conditions were excessively loose.

FIGURE 10 FX RESERVE LOSS AND CURRENCY DEPRECIATION AMONG EMES



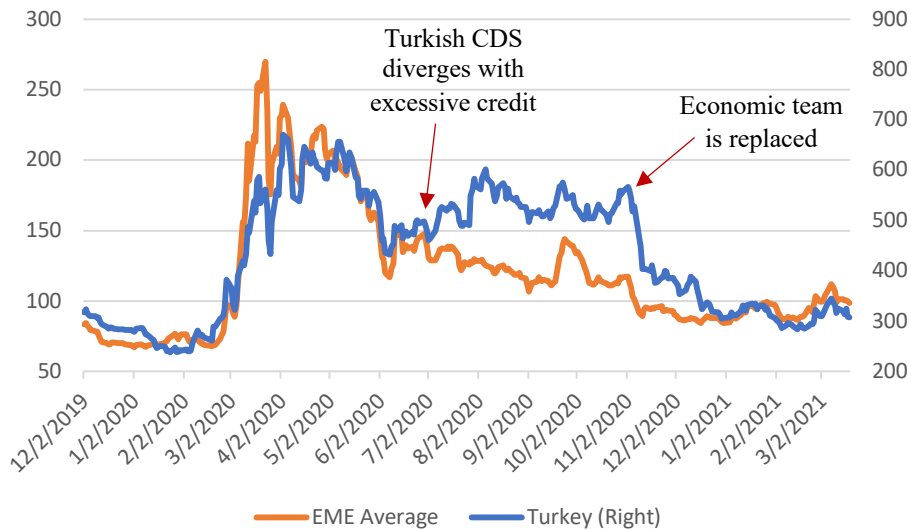
Source: IIF.

BACK TO CONVENTIONAL POLICIES

The strategy of deeply negative real rates and easy credit, coupled with the massive scale of foreign reserve sales to counteract the exchange rate pressures, was not sustainable. By early November 2020, the annual rate of depreciation of the Turkish lira vis-à-vis the US dollar had reached 47% and CBRT net foreign assets had dropped sharply to negative \$48 billion US dollars, increasing the probability of a balance of payments crisis. The failure to contain this spiral ended up with changes among the key policymakers. The central bank governor and the Minister of Treasury and Finance have been replaced, and the newcomers reversed the previous approach and switched back to conventional policies, adopting a more market-friendly approach with enhanced predictability and transparency in policymaking. The CBRT simplified its monetary policy, began raising policy rates to secure a positive real rate, and strengthened the communication framework by putting more emphasis on price stability. Controversial tools such as the asset ratio rule have been abandoned and restrictions on offshore swap transactions have been partly relaxed. Public banks ceased extending easy and low-cost credit. The composition of fiscal policy has been reshuffled to include more targeted transfers for the distressed segments of the economy.

The return to a conventional policy approach has calmed the markets. Capital inflows have resumed, credit growth has slowed, and inflation expectations have stabilised. The lira appreciated by 15% in real terms in three months. The credit risk of FX-denominated sovereign debt, measured by the CDS rate, has declined by more than 200 basis points. Accordingly, the risk spread between Turkey and peer emerging economies, which had widened sharply after the onset of the pandemic, has reverted back to end-2019 levels (Figure 11).²

FIGURE 11 FIVE-YEAR CDS RATES



Source: Bloomberg. EMEs include Brazil, South Africa, Mexico, Indonesia, Malaysia, Mexico, Peru, Russia, Chile, Columbia.

WHAT HAVE WE LEARNED?

Historically, the notion of the monetary–fiscal mix has been a key factor in the success and efficiency of macroeconomic policy management. With the inherently asymmetric effects of the pandemic, the Covid era has further highlighted the role and significance of the composition in the design of economic policy. The Turkish policy mix has been an outlier during the Covid era, as the composition was overwhelmingly biased towards credit growth, with little emphasis on targeted fiscal transfer schemes – especially during the initial stages. Rapid and sizeable credit growth quickly created macroeconomic imbalances, posing potential long-term costs for the economy and hampering the

² At the time of writing of this chapter, the central governor has been replaced once more and market volatility has increased sharply.

sustainability of growth. This episode highlighted the typical damage posed by time-inconsistency problems, namely, creating substantial longer-term costs in exchange for short-term temporary benefits.

The interaction of the policy mix with policy credibility yields another important lesson from the pandemic period. The Turkish experience in the Covid era has demonstrated that credibility is the most precious asset for policymakers during challenging times. This may be even more the case for monetary policy, which, by nature, entails a forward-looking approach. Strong trust in monetary institutions and anchored expectations create more room for manoeuvre in smoothing business cycle fluctuations. In fact, Benigno et al. (2020) suggest that the effectiveness of quantitative easing in emerging markets depends on the degree of policy credibility. A good track record of inflation fighting allows the benefits of quantitative easing to be reaped without disrupting long-term expectations. On the contrary, quantitative easing under low policy credibility may raise inflation expectations and risk premia, leading to an undesirable tightening in financial conditions, which may eventually reverse the initial positive impact of the quantitative easing.

Encouraged by their past track record of low inflation and accumulated credibility buffers, many emerging market economies joined their advanced counterparts during the Covid era in pursuing quantitative easing. The Turkish authorities also conducted bond purchases and provided intensive credit stimulus close in spirit to quantitative easing. However, these attempts had significant side effects due to an unbalanced policy mix, weakly anchored inflation expectations, and imperfect institutional credibility.

Turkey is a case in point regarding the interaction between institutional reputation and the effectiveness of economic policies. Three central bank governors have been replaced in less than two years. The erosion in central bank independence and of checks and balances in the economic governance structure may not only have contributed to the design of an inefficient policy mix, but also weakened the transmission mechanism of such policies during the pandemic period.

Although Turkey became one of the rare countries to post positive GDP growth in 2020, the composition and the size of the policy mix have created sizeable macroeconomic imbalances. Excessively loose monetary and credit policies, coupled with an unsustainable foreign exchange intervention strategy, triggered capital outflows and raised risk spreads, eventually leading to tighter financial conditions. As a consequence, policymakers will not only have to deal with the economic challenges of the post-pandemic period, but will also have to cope with higher inflation, a wider current account deficit, and depleted reserves in the years ahead.

REFERENCES

Benigno G, J Hartley, A G Herrero, A Rebucci and E Ribakova (2020), “Should Emerging Economies Embrace Quantitative Easing during the Pandemic?”, Liberty Street Economics 20201002, Federal Reserve Bank of New York.

CBRT (2020), “Measures Taken against the Economic and Financial Impacts of the Coronavirus”, press release, April.

CBRT (2020), *Financial Stability Report*, May.

CBRT (2020), *Monetary and Exchange Rate Policy for 2021*, December.

CBRT (2021), “The Role of Bank Lending in the Current Account Deficit”, technical box in *CBRT Inflation Report*, January.

Drakopoulos D, R Goel, F Natalucci, and E Papageorgiou (2020), “Emerging and Frontier Markets: Policy Tools in Times of Financial Stress”, IMF Blog, October.

Gülşen E and H Kara (2021), “Policy performance and the behaviour of inflation expectations”, *International Journal of Central Banking*, forthcoming.

IMF (2020), *World Economic Outlook*, April.

IMF (2020), *Fiscal Monitor*, October.

ABOUT THE AUTHOR

Hakan Kara is a former Chief Economist of the Central Bank of the Republic of Turkey. During his tenure at the CBRT, he served as the Head of Modelling Division (2002-2005), Director General of Research and Monetary Policy (2008-2012), and the Chief Economist (2012-2019). Dr. Kara has played a leading role in the analysis, design, implementation, and communication of monetary and macroprudential policies in Turkey during the past two decades.

Kara is a graduate of the New York University Economics PhD programme. He holds a BS from the Electrical-Electrical Department of the Middle East Technical University, and an MA in Economics from Bilkent University. Prof. Kara’s work has been published in scholarly journals including the *Journal of International Economics*, *Journal of Money Credit and Banking*, NBER Working Papers, and the *International Journal of Central Banking*.

APPENDIX

TABLE 1 CHRONOLOGY OF THE MAIN POLICY DECISIONS BY THE CENTRAL BANK OF THE REPUBLIC OF TURKEY (CBRT)

<p>6 March 2020 Reserve requirements for bank FX liabilities were cut by 500 bps. The credit-based reserve requirement rule, which was adopted to incentivise banks for lending, was revised to encourage longer-term funding to households and corporates.</p>
<p>17 March The policy rate (one-week repo auction rate) was cut by 100 bps to 9.75%. The CBRT launched targeted longer-term liquidity facilities with lower cost (100-150 bps below the policy rate depending on the scheme). The maximum amount of funds for eligible banks were linked to the amount of loans extended to the corporate sector. The amount of funds allocated through these facilities was limited to 25% of the total funding to the banking system. Primary dealers' open market operations limits were increased. FX reserve requirement ratios were reduced by 500 bps for banks meeting certain loan growth criterion. The scope of the cross-currency swap auctions was broadened to include euro and gold swaps with longer maturities at one, three, and six months. In order to contain short-term FX demand by corporates and facilitate cash flow management, maturity and repayment dates for CBRT exporter rediscount credits (which is borrowed in lira and repaid in FX) were extended.</p>
<p>31 March CBRT announced that the outright purchase of the annually planned government securities would be accelerated in a frontloaded manner. For a temporary period, the primary dealer banks were allowed to sell the government securities they bought from the Unemployment Insurance Fund to the CBRT, or to increase at certain ratios the liquidity facility offered under OMO in the scope of the primary dealership system. The collateral pool for both TL and FX lending was expanded to include to include asset-backed and mortgage-backed securities. The limits for lower cost and longer-term lending facilities were increased. The CBRT launched a new low-cost facility (150 bps below the policy rate) to support TL loans to exporters, the use of which, via commercial and development banks, was conditioned on maintaining employment levels.</p>
<p>3 April Swap transaction quotas for banks were raised by 50% (this was later revised up several times).</p>
<p>17 April Upper limit of government security purchases was raised to 10% of the CBRT asset size.</p>
<p>22 April The policy rate was cut by 100 bps to 8.75%.</p>
<p>20 May Bilateral currency swap agreement between the CBRT and Qatar Central Bank was increased by \$10 billion.</p>

<p>21 May The policy rate was cut by 50 bps to 8.25%.</p>
<p>5 June The CBRT launched a new lending facility to fund new investments through Development and Investment Bank of Turkey at a (150 bps) lower cost than the policy rate.</p>
<p>20 June Reserve requirement rule to incentivise bank loan expansion was extended until the end of 2020.</p>
<p>17 March The minimum deferral duration of 90 days for banks' non-performing loans was extended to 180 days. The deferral was further extended several times.</p>
<p>19 March Loan-to-value ratio (LTV) caps for housing loans were raised to 90% from 80%.</p>

TABLE 2 CHRONOLOGY OF THE SELECTED POLICY DECISIONS BY THE BANKING REGULATION AND SUPERVISION AGENCY

<p>23 March 2020 In order to protect bank balance sheets and equity from the fluctuations in interest rates and exchange rates, forbearance measures were introduced in the calculation of banks' capital adequacy and provisions.</p>
<p>25 March CGF backed lending scheme to support commercial loans through public banks was initiated, the use of which was made conditional on maintaining the employment levels. Loan guarantee packages were further expanded and widened in several directions at different dates.</p>
<p>26 March Caps on liquidity coverage ratios were relaxed.</p>
<p>30 March The minimum payment amount for personal credit cards was reduced to 20% from 30%.</p>
<p>12 April Banks' off-shore cross-currency swap and derivative transactions with foreigners were restricted to 1% of their capital.</p>
<p>1 May The BRSA introduced the 'asset ratio rule' to incentivise banks to expand loans, purchase government bonds, and make cross-currency swaps with the CBRT.</p>

PART IV

EVALUATION OF THE RESPONSES AND IMPLICATIONS FOR THE FUTURE

CHAPTER 18

Central banks and the Covid-19 economic crisis

313

Claudio Borio

Bank for International Settlements

A unique crisis calls for a unique response. The containment measures adopted to tackle the Covid-19 health emergency brought the global economy to a ‘sudden stop’ and elicited an unprecedented policy response – in terms of its size, speed, scope, and geographical reach. Monetary, fiscal, and prudential policies were all activated in close concert in a matter of weeks. The underlying objective was to ensure that firms and households could weather the storm, by providing them with credit and additional income.

Once again, but this time closely flanked by governments, central banks were at the centre of the action. They took extraordinary measures wearing their monetary and, in many instances, prudential hats. What did they do? What worked? What are the challenges ahead?¹

THE RESPONSE

Consider central banks’ response in the monetary and prudential domains, respectively.

As monetary authorities, the speed, size and range of measures central banks took exceeded even those seen during the global financial crisis (GFC) of 2007–09. Interest rates were cut swiftly and balance sheets deployed aggressively (Figure 1) as central banks lent out funds, bought securities and provided backup facilities (Table 1) – all in the time-old lender-of-last-resort tradition.

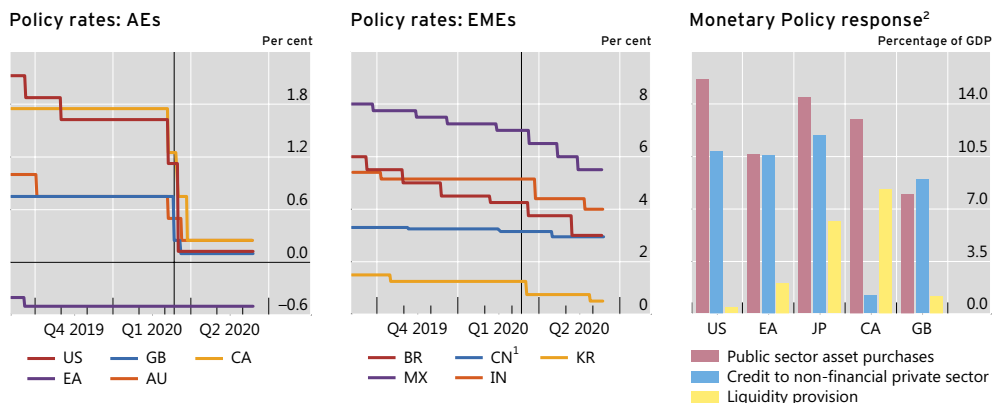
In one respect, central banks simply adapted the measures to the shifting contours of the financial system, extending the evolution already seen during the GFC. In particular, because of the rapid growth of market-based finance relative to bank finance, they acted more as dealers or, strictly speaking, buyers of last resort than just lenders of last resort. Hence their large-scale purchases of both private and public sector securities in an effort to stabilise markets.

¹ This presentation draws heavily on the latest BIS Annual Economic Report (BIS (2020a)) and on Borio (2020a). The views expressed are my own and not necessarily those of the BIS.

TABLE 1 CENTRAL BANKS' UNPRECEDENTED RESPONSE

Type of tool	Measures	Advanced economies										Emerging market economies					
		US	EA	JP	GB	CA	AU	CH	BR	CN	ID	IN	KR	MX	TH	ZA	
Interest rate	Policy rate cut	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lending/ liquidity	Gen. liquidity provision ¹	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Specialised lending	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Asset purchases/ sales	Government bonds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Commercial paper	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Corporate bonds	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Other private securities ²	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FX swap/ intervention	USD swap line	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	FX intervention							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prudential rules and regulations	Capital requirements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Liquidity requirements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Payout restrictions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Market functioning ³	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Notes: 1 For example, repo and reverse repo operations, standing facilities, modified discount window and lower reserve requirement ratio. 2 For example, asset- and mortgage-backed securities, covered bonds and exchange-traded funds. 3 For example, short-selling bans and circuit breakers.
Source: National data.

FIGURE 1 SWIFT AND FORCEFUL RESPONSE

Notes: The vertical lines in the left-hand and centre panels indicate 11 March 2020 (coronavirus outbreak declared a pandemic by the World Health Organization). 1 Medium-term lending facility, one-year rate. 2 Projected maximum support during March–December 2020, based on official announcements. See Cavallino and De Fiore (2020).

Sources: Cavallino and De Fiore (2020); Datastream; national data; BIS calculations.

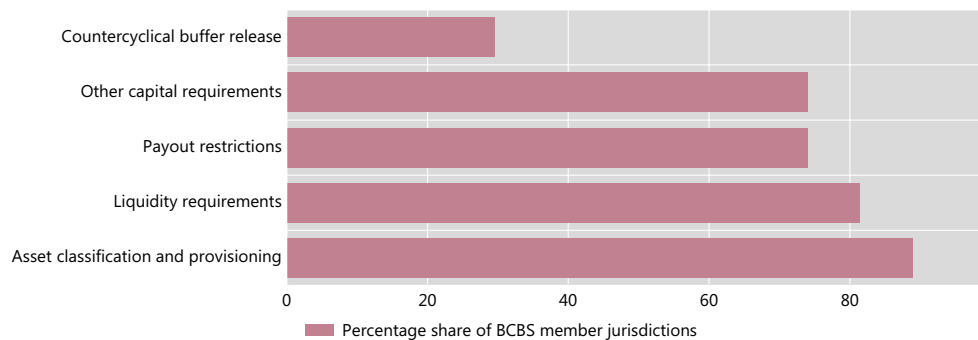
In another respect, central banks broke new ground. They went one step further relative to the past, seeking to cover ‘the last mile’ to reach businesses directly, including small and medium-sized enterprises. In the process, central banks went down the credit scale more than ever before.

Just as during the GFC, international cooperation proved key. In particular, the Federal Reserve activated FX swap lines with the main advanced economy central banks and with a number of their emerging market peers to ensure that dollar credit – the lifeblood of the international financial system – would not dry up.

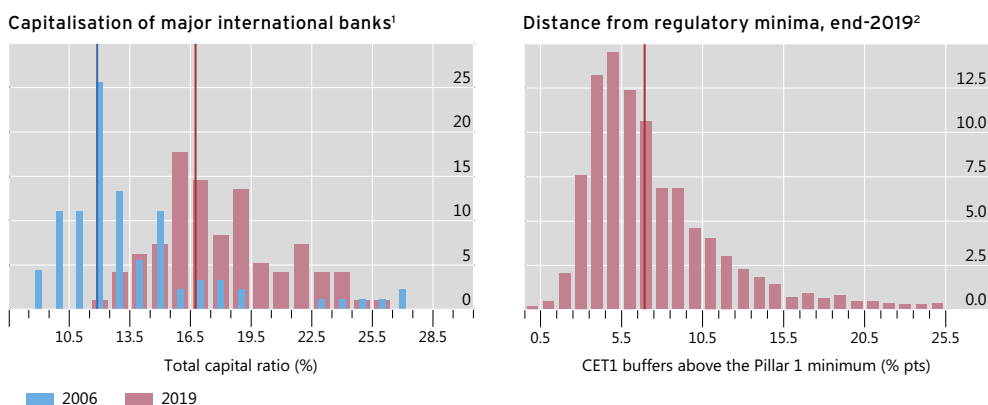
As prudential authorities, central banks took extraordinary measures. Rather than encouraging banks to pull in their horns, they discouraged them from doing so. This was the first time policymakers took an explicit macroprudential or system-wide perspective, in the belief that excessive prudence would damage the economy and, in the end, banks themselves – a quintessential form of general equilibrium reasoning. Prudential authorities used all the flexibility at their disposal to prevent regulatory and supervisory constraints from inducing banks to deleverage.² They eased both capital and liquidity requirements; imposed blanket distribution restrictions, such as on dividends; eased the classification of exposures, such as non-performing loans; and softened the regulatory treatment of accounting losses – specifically that of the new expected credit loss provisioning standard (Figure 2). They could only do so because banks had substantially strengthened their capital base post-GFC, largely as a result of the international regulatory reforms (Figure 3).³ Policymakers could look upon banks as part of the solution, rather than as part of the problem.

² For an analysis of these measures, see Borio and Restoy (2020).

³ See Borio et al. (2020) for a comprehensive review and analysis of the post-GFC international financial reforms.

FIGURE 2 COUNTRIES TAKING EASING PRUDENTIAL MEASURES (%)

Sources: Basel Committee on Banking Supervision; BIS calculations.

FIGURE 3 BANKS ENTERED THE CRISIS IN A STRONG POSITION (%)

Notes: The vertical line in each panel indicates the median for the respective year. 1 Based on a balanced sample of 135 large banks. The increase in capital ratios is likely to be higher than portrayed due to more stringent rules on regulatory capital and risk-weighted assets introduced after the GFC. 2 Difference between the Common Equity Tier 1 (CET1) ratio and the sum of the following regulatory requirements: minimum Basel III CET1 ratio (4.5%), capital conservation buffer (2.5%, assuming full implementation), the bank-specific capital surcharge on systemically important banks and the country-specific countercyclical capital buffer (up to 2%) at end-2019. Based on a global sample of 3,616 banks.

Sources: Aldasoro et al. (2020); Lewrick et al. (2020); FitchConnect; BIS calculations.

As both monetary and prudential authorities, central banks worked in close concert with fiscal authorities. Fiscal authorities provided key support through indemnities and guarantees. Indemnities and other forms of backup credit support leveraged central banks' balance sheets, increasing the amount of loan capital available. Guarantees on new bank loans provided banks with an incentive to use their lending capacity.

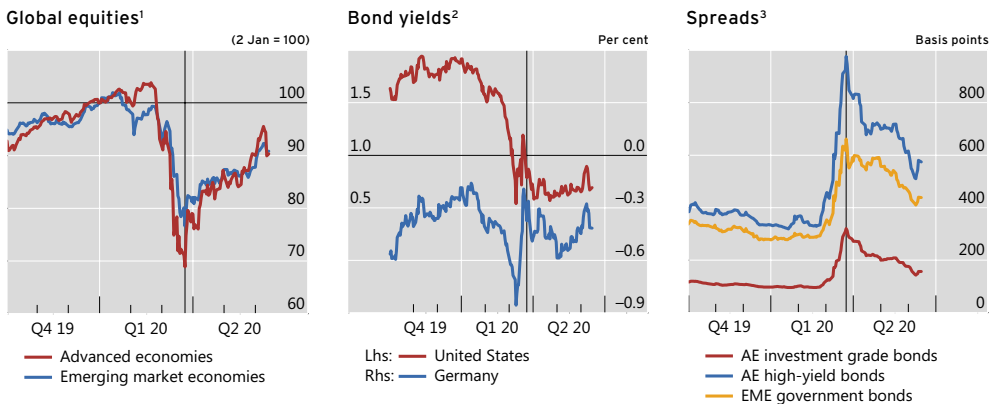
WHAT WORKED

So far, the concerted policy response has worked.

Banks have acted more as shock absorbers than amplifiers. They have not deleveraged and have kept credit flowing. A concrete example is that, as firms drew heavily on their credit lines, banks did not cut other forms of credit. In sharp contrast to the GFC, credit did not contract as the crisis struck; rather, it expanded considerably.

Financial markets stabilised quickly in the wake of the central banks' response in April (Figure 4). In fact, they turned on a dime. Equity prices rebounded, credit spreads narrowed and money market tensions dissipated, domestically and internationally, in both advanced and emerging market economies (EMEs). Indeed, the successful countercyclical monetary response in EMEs was remarkable when seen in a historical perspective.⁴ A mix of hard-earned greater credibility of policy frameworks and extraordinarily easy global financial conditions no doubt played a role. More generally, the crisis showed that central banks can have a powerful impact on financial conditions provided they are prepared to deploy their weapons aggressively.⁵

FIGURE 4 POLICIES STABILISED MARKETS



Notes: The vertical line in each panel indicates 23 March 2020 (the Federal Reserve announces the Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF)). 1 Based on GDP-weighted averages across countries. For AEs, AU, CA, CH, DK, EA, GB, JP, NO, NZ, SE and US. For EMEs, BR, CL, CN, CO, CZ, HU, HK, IN, ID, KR, MX, MY, PE, PH, PL, RU, SG, TH, TR and ZA. 2 Ten-year government bond yields. 3 Corporate bonds for AEs and government bonds for EMEs. For AEs, simple average of US and European indices.

Sources: Bloomberg; BoAML ICE indices; JPMorgan Chase; national data; BIS calculations.

⁴ For an analysis of the operations, see Arslan et al. (2020).

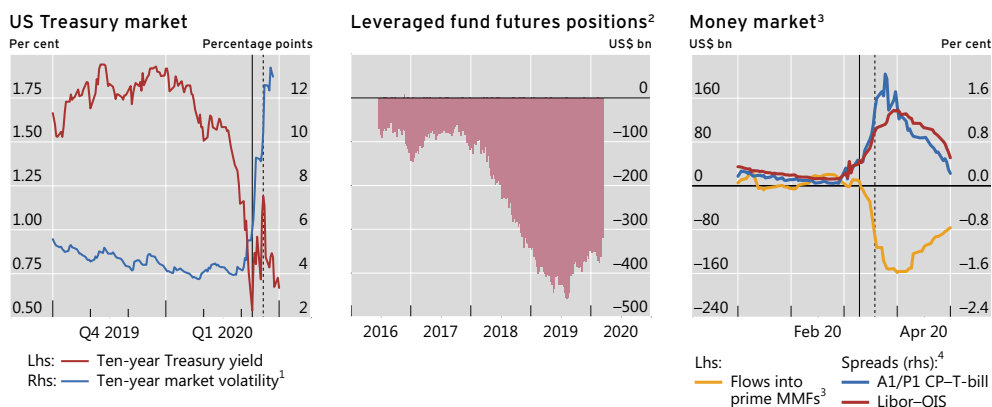
⁵ Indeed, the response has been so strong that it has raised legitimate questions of a possible disconnect between risky asset prices and underlying economic prospects; see BIS (2020b).

To be sure, the economy still dived. But this was inevitable, as the lockdowns directly suppressed activity and confined people to their homes. No doubt, an implosion of financial markets and the financial system, this time driven by an exogenous blow to the real economy, would have caused much greater damage. The vigorous policy response avoided the worst and provided essential oxygen for survival.

CHALLENGES

Still, challenges remain. Three deserve particular attention: the first is regulatory and structural; the second macroeconomic and short-term; and the third macroeconomic and longer-term.

FIGURE 5 TURMOIL IN US MARKETS



Notes: The solid vertical line in the left- and right-hand panels indicates 9 March 2020 (the date of the spike in the Treasury yield); the dashed vertical line indicates 18 March 2020 (the establishment of the Federal Reserve's Money Market Mutual Fund Liquidity Facility, MMLF). 1 Exponentially weighted moving average volatility over a one-year window (decay factor = 0.96). 2 Net US Treasury futures positions. 3 Cumulative changes in assets under management by US MMFs since December 2019. 4 T three-month funding spreads. During the GFC, Libor-OIS reached 366 bp on 10 October 2008.

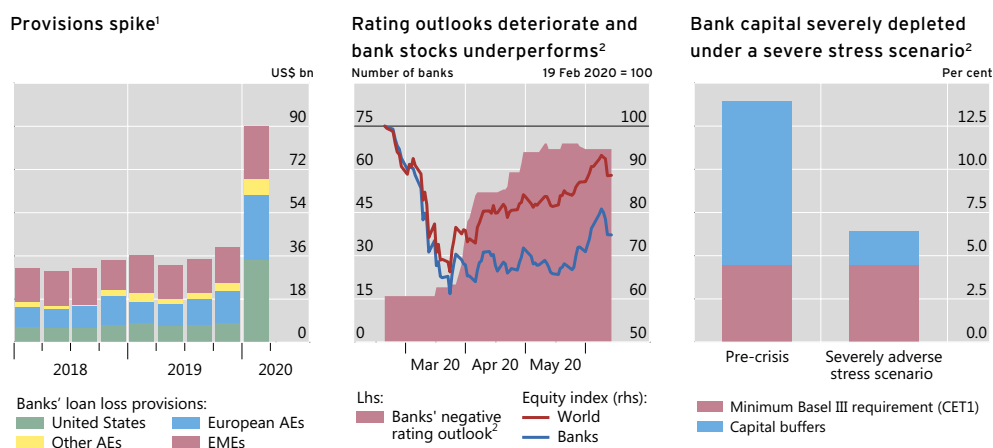
Sources: Schrimpf et al. (2020); Eren et al. (2020a); Bloomberg; CFTC; Crane Data; BIS calculations.

The regulatory challenge is how to address structural vulnerabilities in the market-based finance sector, i.e. non-bank financial intermediaries. For the second time in a decade, central banks had to intervene heavily in markets in order to stabilise the financial system, as widespread forced selling caused widespread disruption. On this occasion, the US Treasury market – one of the most liquid markets in the world and a cornerstone of the international financial system – was at the epicentre of the tensions (Figure 5). And those tensions extended to the critical offshore US dollar market.⁶ To be sure, an intended objective of the post-GFC arrangements was to shift risk outside the banking system. On balance, a financial system in which highly leveraged banks, at the core of the payments system, do not bear a disproportionate amount of risk is more resilient. At the same time,

6 For an analysis of the various sources of tension and market dynamics, see Schrimpf et al. (2020), Eren et al. (2020a, 2020b) and Avdjiev et al. (2020).

it is important that liquidity mismatches and hidden leverage, such as those inherent in money market mutual funds, are kept under control.⁷ A major international effort is under way to address these issues, under the aegis of the Financial Stability Board and with the close involvement of the BIS and its Committees.

FIGURE 6 BANKS ARE UNDER PRESSURE AND BUFFERS ARE LIMITED IF THE CRISIS PERSISTS



Notes: 1 Sum of quarterly loan loss provisions across sample of banks. Due to data unavailability, data for reclassified impairment of loans used for several banks. Due to newly introduced expected loss provisioning standards, a break in the series is expected which could show up in different periods across countries, starting in 2018. 2 Fitch long-term rating outlook for a constant sample of 108 banks. Rating outlooks were fairly stable in the months leading up to March 2020. 3 Sensitivity analysis based on a sample of 5,600 banks at end-2019; the stress scenario replicates the GFC.

Sources: Aldasoro et al. (2020); Lewrick et al. (2020); Datastream; FitchConnect; SNL.

The near-term challenge is how to tackle the solvency phase of the crisis, to which economies are slowly transitioning after experiencing an acute illiquidity phase. In the solvency phase, the issue is not to provide bridge financing and temporary income to allow economic agents to survive, but rather to distinguish viable from non-viable firms.⁸ The combination of higher debt and long-lasting pandemic-induced changes in demand patterns raises the spectre of bankruptcies, which are indeed expected to rise.⁹ The challenge would be particularly daunting should banks themselves run into trouble. In fact, markets and rating agencies have already started marking them down (Figure 6).¹⁰ The intensity of this phase will depend on the intensity and duration of the health emergency and of policy support. On the negative side, the pandemic has already

7 On this, see also Borio et al. (2020).

8 There are two different types of risk here. One is to liquidate insolvent but viable firms, which would rather call for debt restructuring. Another is to keep unviable firms alive. On the issue of persistently unprofitable ("zombie") firms, which was bound to become more acute in the wake of the Covid-19 crisis, see Banerjee and Hofmann (2018, 2020). On the broader need for resource reallocations, see Banerjee et al. (2020a) and Carstens (2020).

9 For an analysis of the likely increase in bankruptcies, see Banerjee et al. (2020b), who estimate a rise in the region of 20-60% in 2021 relative to 2019.

10 For an analysis of the adequacy of the size of the buffers, see Lewrick et al. (2020); for an analysis of the market reaction, see Aldasoro et al. (2020).

lasted longer than originally expected and a second wave has induced governments to reimplement lockdowns, albeit generally less severe than the initial ones. On the positive side, the arrival of a vaccine suggests that an end to the travails may be in sight, so far policymakers have continued to extend generous support and some baseline estimates suggest that in a central scenario the credit losses would be manageable and smaller than those during the GFC.¹¹

During this tricky phase, it is governments, not central banks, that must do the heavy lifting. The problem cannot be solved simply by providing more funding, which is what central banks wearing their monetary hat can do. Monetary policy can at best remain accommodative to facilitate an orderly adjustment. That said, wearing their prudential hat, central banks can play a key role should banks face difficulties, by promoting balance sheet repair through a prompt recognition of losses and, together with the government if the need arises, a broader restructuring. A well-functioning banking system is a *sine qua non* for a smooth reallocation of resources across sectors and firms and to ensure that the transmission of monetary policy remains effective.

The longer-term challenge is to rebuild the policy buffers, in particular monetary and fiscal, that the necessary response to the crisis has inevitably reduced further. Interest rates are at an all-time low, sometimes below zero; moreover, both central bank balance sheets and government debt are at peacetime highs. This has inevitably narrowed the room for policy manoeuvre. An economy operating without safety margins is vulnerable and exposed. That is why policies in other domains, from energy to transport and health, build in such margins. The Covid-19 crisis has highlighted just how important those buffers are, regardless of how unlikely adverse events might be. Once the legacy of the crisis has been cast off and the economy has sustainably recovered, rebuilding policy buffers will be a priority.

The difficulty of this task should not be underestimated. Already pre-Covid, the room for manoeuvre on the two fronts had narrowed substantially. Fiscal policy generally faces serious political economy constraints, which make it hard to consolidate in good times and play down the looming contingent liabilities of ageing societies. Monetary policy has faced the challenge of inflation rates stubbornly stuck below objectives – a challenge which may well persist in the medium term, although price pressures are likely to emerge in the near term.¹²

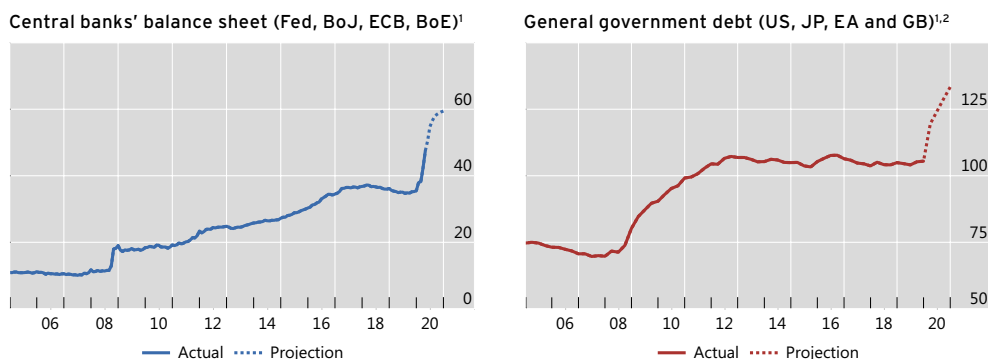
In this context, higher public debt will complicate matters (Figure 7, right-hand panel). By making government finances more sensitive to increases in interest rates, it raises the risk that central banks may come under pressure to refrain from normalising even when

11 For a top-down analysis, see Mojon et al. (2021) and for a bottom-up one, Banerjee et al. (2021).

12 Economic slack aside, some of the slow-moving forces that have arguably exerted disinflationary pressure – globalisation and technology – are unlikely to dissipate; see Borio (2017) for a longer-term analysis and Borio (2020b) for a more forward-looking one. Moreover, some intellectual perspectives that inform current monetary policy frameworks raise complications of their own; see Borio (2020c).

conditions call for it.¹³ Furthermore, large-scale central bank purchases of government debt increase that sensitivity (left-hand panel): from the perspective of the consolidated public sector balance sheet, they de facto amount to large-scale debt management operations that replace long-term debt with overnight debt (central bank reserves).¹⁴

FIGURE 7 MONETARY AND FISCAL INTERACTIONS WILL BE PROMINENT GOING FORWARD



Notes: 1 Projections based on end-April 2020 exchange rates. 2 Projections based on IMF WEO data..

Sources: IMF, *World Economic Outlook*; national data; BIS calculations.

All this highlights the need to re-establish a proper demarcation between monetary and fiscal policy. Preserving central bank independence will be essential to allow central banks to pursue their mandates free of political pressure.¹⁵ Otherwise, their hard-earned credibility could be at risk. It was precisely that credibility which allowed them to take extraordinary actions during the Covid-19 crisis. This valuable intangible is vital for long-term monetary, financial and macroeconomic stability.

REFERENCES

Aldasoro, I, I Fender, B Hardy and N Tarashev (2020), “Effects of Covid-19 on the banking sector: the market’s assessment”, *BIS Bulletin* No. 12, May.

Arslan, Y, M Drehmann and B Hofmann (2020), “Central bank bond purchases in emerging market economies”, *BIS Bulletin* No. 20, June.

Avdjiev, S, E Eren and P McGuire (2020), “Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market”, *BIS Bulletin* No. 1, April.

¹³ More generally, as argued in Borio and Disyatat (2014), there may be a risk of a ‘debt trap’ whereby low rates can encourage the build-up of debt, and associated financial and macroeconomic fragilities, which in turn makes it harder for central banks to normalise policy.

¹⁴ For an analysis of the ambiguous and often misunderstood concept of ‘monetary financing’, see BIS (2020a) and Borio et al. (2016).

¹⁵ For an in-depth discussion of central bank independence from a historical perspective, including prospects, see Borio (2019).

Banerjee, R, E Kharroubi and U Lewrick (2020a), “Bankruptcies, unemployment and reallocation from Covid-19”, *BIS Bulletin* No. 31, October.

Banerjee, R, G Cornelli and E Zakrajšek (2020b), “The outlook for business bankruptcies”, *BIS Bulletin* No. 30, October.

Banerjee, R and B Hofmann (2018), “The rise of zombie firms: causes and consequences”, *BIS Quarterly Review*, September: 67–78.

Banerjee, R and B Hofmann (2020), “Corporate zombies: anatomy and life cycle”, BIS Working Papers No. 882, September.

Banerjee, R, J Noss and J Vidal Pastor (2021), “Liquidity to solvency: transition cancelled or postponed?”, *BIS Bulletin* No. 40, March.

BIS – Bank for International Settlements (2020a), *Annual Economic Report 2020*, June, Basel.

BIS (2020b), “Overview: markets rise despite subdued recovery”, *BIS Quarterly Review*, September.

Borio, C (2017), “Through the looking glass”, OMFIF City Lecture, London, 22 September.

Borio, C (2019), “Central banking in challenging times”, SUERF Annual Lecture delivered at the Conference on Populism, economic policies and central banking, SUERF/BAFFI CAREFIN Centre Conference, Milan, 8 November.

Borio, C (2020a), “The Covid-19 economic crisis: dangerously unique”, speech at the National Association for Business Economics, Perspectives on the Pandemic Webinar Series, 2 July (forthcoming in Business Economics).

Borio, C (2020b), “Is inflation dead or hibernating?”, presentation at the 24th Annual Barclays Global Inflation Conference, 5 October (forthcoming in SUERF Policy Notes).

Borio, C (2020c), “When the unconventional becomes conventional”, panel remarks at The ECB and Its Watchers XXI, Frankfurt, 30 September.

Borio, C and P Disyatat (2014), “Low interest rates and secular stagnation: is debt a missing link?”, VoxEU.org, 25 June.

Borio, C, P Disyatat and A Zabai (2016), “Helicopter money: the illusion of a free lunch”, VoxEU.org, 24 May.

Borio, C, M Farag and N Tarashev (2020), “Post-crisis international financial regulatory reforms: a primer”, BIS Working Papers No. 859, April.

Borio, C and F Restoy (2020), “Reflections on regulatory responses to the Covid-19 pandemic”, FSI Briefs No. 1, April.

Cavallino, P and F De Fiore (2020), “Central banks’ response to Covid-19 in advanced economies”, *BIS Bulletin* No. 21, June.

Carstens, A (2020), “The Great Reallocation”, *Project Syndicate*, 12 October.

Eren, E, A Schrimpf and V Sushko (2020a), “US dollar funding markets during the Covid-19 crisis – the money market fund turmoil”, *BIS Bulletin* No. 14, May.

Eren, E, A Schrimpf and V Sushko (2020b): “US dollar funding markets during the Covid-19 crisis – the international dimension”, *BIS Bulletin* No. 15, May.

Lewrick, U, C Schmieder, J Sobrun and E Takáts (2020), “Releasing bank buffers to cushion the crisis – a quantitative assessment”, *BIS Bulletin* No. 11, May.

Mojon, B, D Rees and C Schmieder (2021): “How much stress could Covid put on corporate credit? Evidence using sectoral data”, *BIS Quarterly Review*, March: 55–70.

Schrimpf, A, H S Shin and V Sushko (2020): “Leverage and margin spirals in fixed income markets during the Covid-19 crisis”, *BIS Bulletin* No. 2, April.

ABOUT THE AUTHOR

Claudio Borio is Head of the Monetary and Economic Department (MED), Bank for International Settlements. He has been at the BIS since 1987, covering various responsibilities in the Monetary and Economic Department including Director of Research and Statistics and Head of the Secretariat of the Committee on the Global Financial System and the Gold and Foreign Exchange Committee, which examine, inter alia, issues related to financial stability and market functioning. From 1985-1987, he worked as Economist at the OECD in the country studies branch of the Economics and Statistics Department. Prior to that, he was Lecturer and Research Fellow at Brasenose College, Oxford University. He holds a DPhil and MPhil in Economics and a BA in Politics, Philosophy and Economics from the same university. Author of numerous publications in the fields of monetary policy, banking, finance and issues related to financial stability.

CHAPTER 19

Assessment of monetary and financial policy responses in advanced economies to the Covid-19 crisis

Laurence Boone and Łukasz Rawdanowicz

OECD

Financial market panic at the beginning of the Covid-19 pandemic triggered unprecedented and multifaceted central bank interventions. While it is still early for a comprehensive assessment of the monetary stimulus, a few initial observations can be made. The concerted, fast and sizeable reaction of central banks around the globe was effective in preventing financial market meltdown and thus minimised negative implications for the real economy. With low interest rates prior to the crisis, central banks had to rely increasingly on unconventional measures to stimulate the economy. Credit flows were sustained due to the policy-induced easing of financial conditions coupled with prudential support, banks' sufficient pre-crisis capital and liquidity and, in some cases, joint central bank and government lending programmes. Large monetary and fiscal stimuli have preserved most of the economic structure, providing a sound basis for a recovery in employment and output. This highlights the benefits of concerted actions of fiscal and monetary authorities during severe downturns, when monetary policy can be less effective. Looking to the future, achieving inflation targets in a sustainable manner, including via steering private inflation expectations, may continue to be challenging due to pre-pandemic, longer-term structural deflationary forces. Beyond structural policies, careful articulation of monetary and fiscal policies will likely continue to be needed. In particular, the sequencing of monetary and fiscal policy normalisation will be crucial to sustainable growth and to bringing inflation to target.

MONETARY AND FINANCIAL AUTHORITIES HAVE REACTED FORCEFULLY

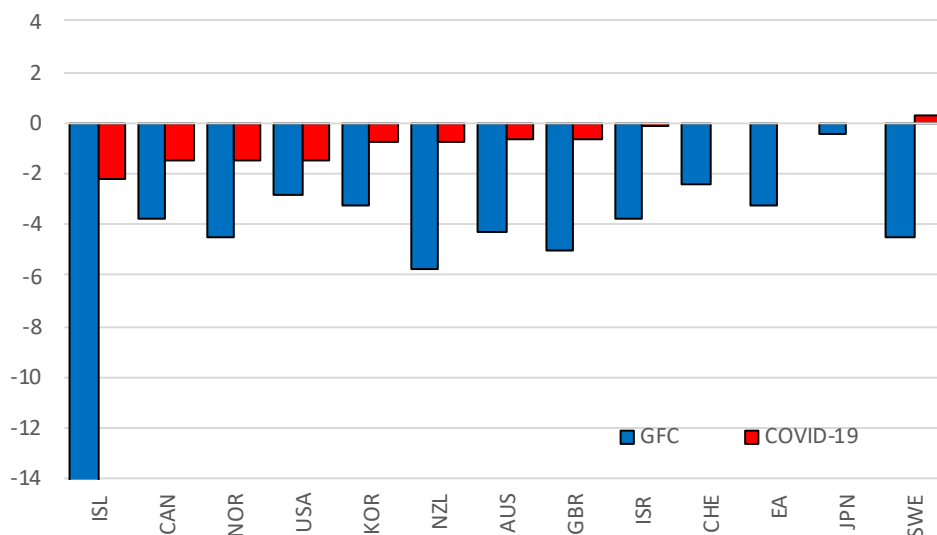
The forceful monetary policy easing in advanced economies (AEs) in response to the financial market panic was administered primarily via unconventional monetary policy measures as pre-crisis policy interest rates were already low. Besides, many unconventional measures had been already tested during the global financial crisis (GFC) so that it was easier and faster to implement them in 2020.

Policy interest rate cuts and forward guidance were limited

In the median AE, the policy interest rate was lowered by around $\frac{3}{4}$ percentage points (significantly less than during the GFC, when the median cut was $4\frac{1}{2}$ percentage points), and four central banks did not reduce interest rates at all (Figure 1). This stemmed from the diminished space for conventional monetary policy easing as policy rates were increased only a little or not at all after the financial crisis. A few central banks – including in Australia, Canada, the euro area and the United States – provided forward guidance on interest rates, linked mostly to the inflation and economic outlook.

FIGURE 1 POLICY INTEREST RATES WERE CUT BY MUCH LESS THAN IN THE GLOBAL FINANCIAL CRISIS

Percentage point change in policy interest rates



Note: GFC refers to the change in the policy interest rate during the global financial crisis (i.e. between the maximum in 2008 and the minimum in 2009-2010). COVID-19 refers to the change in the policy interest rate during the COVID-19 crisis (i.e. between end-2019 and mid-March 2020).

Source: Bank for International Settlements; and authors' calculations.

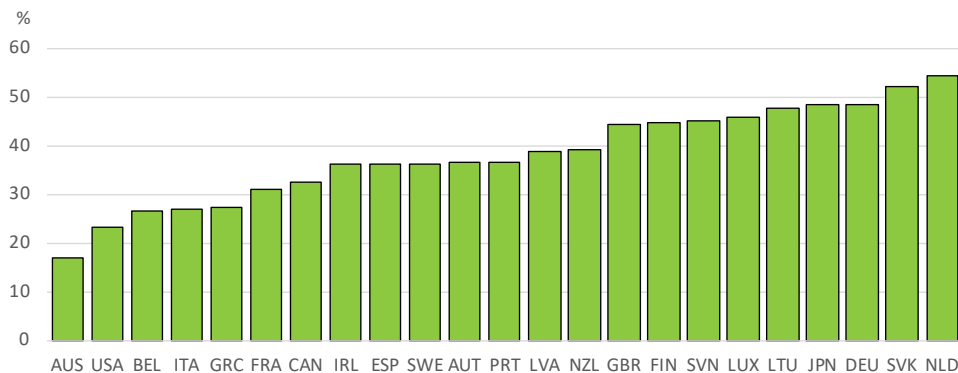
Large asset purchases were prevalent

An increasing number of central banks in AEs announced large-scale asset purchases. This was motivated by the limited scope to cut interest rates, local market dislocations, and a desire to boost liquidity in the financial system. The US Federal Reserve announced unlimited government bond purchases and the ECB gradually increased its asset purchase

programmes to €1.9 trillion (16% of 2019 GDP).¹ The Bank of Japan also expanded (already high) net purchases of government debt securities during 2020, while maintaining yield curve control. This involved a large increase in purchases of government bills in mid-2020 to help absorb the impact of higher government spending. Several other AEs – including Australia, Canada, Iceland, Israel, New Zealand, Sweden and the United Kingdom – announced asset purchase programmes too. Their sizes varied greatly: over 30% of GDP in New Zealand, 20% of GDP in the United Kingdom, around 10% of GDP in Australia and Sweden, and 6% of GDP in Israel.² By early 2021, the actual net asset purchases were substantial even if below the announced targets. Following the recent and pre-crisis government bond purchases, several central banks now own between around 30% and 50% of total outstanding government securities (Figure 2).

FIGURE 2 CENTRAL BANKS OWN A LARGE SHARE OF GOVERNMENT BONDS

Central bank holdings of government securities in per cent of total government tradable securities



Note: As of end-February 2021 or latest available. For Australia, Canada, Japan and the United States, treasury bills are excluded.

Sources: Australian Office of Financial Management; Bank of Canada; Bank of England; Bank of Israel; Bank of Japan; BIS debt securities database; Board of Governors of the Federal Reserve System; Bureau of Fiscal Services; European Central Bank; Ministry of Finance Japan; New Zealand Government, the Treasury; Reserve Bank of Australia; Reserve Bank of New Zealand; Swedish central government debt statistics; Sveriges Riksbank; UK Debt Management Office; US Department of the Treasury; and authors' calculations.

Central banks purchased mainly sovereign bonds but acquired increasingly risky assets. The latter included corporate bonds (in the euro area and Japan and, for the first time, in Israel, Sweden, the United Kingdom and the United States); covered bonds (Sweden);

1 Since early 2020, the Federal Reserve has increased its holdings of government bonds by \$2.6 trillion (12% of 2019 GDP), as much as the total nominal cumulative net purchases between 2009 and 2014, and the ECB has increased its public asset holdings by €1 trillion (nearly 9% of 2019 GDP), which was twice as much as in the year from the start of the public sector asset purchase programme in early 2015.

2 The Central Bank of Canada had initially announced purchases of minimum CAD 5 billion per week (equivalent of around 0.8% of GDP per month), with the size and duration expected to evolve with financial and economic conditions. The purchases were reduced to CAD 4 billion per week in December 2020.

commercial mortgage-backed securities (Canada and the United States); state and local government bonds (New Zealand, Sweden and the United States); and – indirectly – equities (Japan).

The Reserve Bank of Australia also implemented yield curve control by committing to buy government bonds in order to maintain the three-year government bond yield close to target (initially set at 0.25% and then reduced to 0.1%). Apart from the Reserve Bank of Australia, only the Bank of Japan has used such a policy since 2016. The Bank of England and the US Federal Reserve discussed options for introducing yield curve control but judged the policy unnecessary (FOMC 2020).

Large liquidity and lending support programmes were announced

Many central banks in AEs implemented various measures to support liquidity in the financial sector. In several economies – including Australia, Canada, the euro area, Israel, Japan, Norway, South Korea, Switzerland and the United States – access to existing liquidity facilities for eligible financial institutions was improved and the costs of these facilities were reduced. This involved increasing the frequency of auctions, expanding eligible collateral, extending the maturity of loans, and making unlimited amounts available through open market operations (subject to adequate collateral). The Bank of Korea and Sveriges Riksbank also expanded the list of eligible participants in open market operations. In addition, some central banks created new liquidity facilities (in Canada, the euro area, New Zealand, Sweden and the United Kingdom, for example).

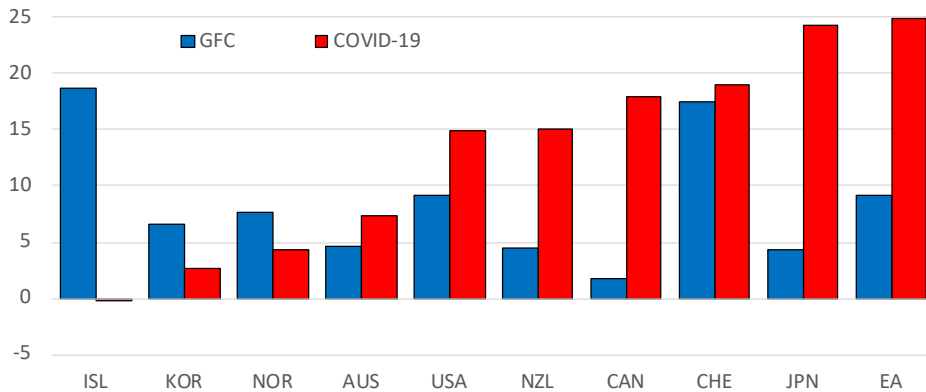
Monetary authorities also provided liquidity injections for banks at long maturities and at low costs, with direct incentives to support lending to businesses and households. For instance, the ECB made conditions of its existing longer-term refinancing operations more generous, with funds lent even at a negative interest rate. Similar programmes were implemented in Australia (the Term Funding Facility providing three-year funding at a fixed rate, where the amount could be raised if banks increased lending to businesses), Sweden (providing loans to banks for onward lending to non-financial companies and sole proprietors, with less favourable interest if onward lending did not increase), and New Zealand (the Funding for Lending Programme, where the size of loanable funds partly depended on new lending). In some countries, central banks directly co-operated with governments to provide lending to the private sector.³ Given the specific nature of the COVID-19 crisis, several programmes – including in Israel, Japan, South Korea and the United Kingdom – focused on micro, small and medium-sized firms, as they were particularly affected by the containment measures.

3 For instance, the Bank of England together with HM Treasury set up a joint Covid Corporate Financing Facility, under which the central bank purchased sterling-denominated commercial paper from eligible non-financial (mostly larger) firms. The Reserve Bank of New Zealand established the Term Lending Facility where funds given to banks were linked to their lending under the government's Business Finance Guarantee Scheme.

The combined effects of asset purchases and liquidity and lending support measures in AEs resulted in a massive increase in total assets of many central banks. For some, the increase was between 10% and 25% of GDP and was larger than during the GFC (Figure 3).⁴

FIGURE 3 CENTRAL BANK TOTAL ASSETS INCREASED SIGNIFICANTLY

Change in central bank's total assets, as a per cent of pre-crisis GDP



Note: GFC refers to the change between June 2008 and the maximum between July 2008 and December 2009 as a per cent of 2008 GDP. COVID-19 refers to the change between December 2019 and the maximum in 2020-21 as a per cent of 2019 GDP.

Source: Refinitiv; OECD Economic Outlook 108 database; and authors' calculations.

Measures were taken to address foreign-currency liquidity and exchange rate exposures

To help ease pressures in global US dollar funding, the Bank of Canada, the Bank of England, the Bank of Japan, the ECB, the US Federal Reserve and the Swiss National Bank enhanced existing swap lines by extending maturity, increasing the frequency and lowering the price of operations. The Federal Reserve has also expanded currency swap lines with nine central banks, including in Australia, Brazil, Mexico, New Zealand, Norway, Sweden and South Korea. The US Federal Reserve swap lines peaked at \$449 billion (around \$134 billion less than at the peak of the GFC peak). The ECB set up the Eurosystem repo facility to provide precautionary euro repo lines to several central banks outside the euro area, which complemented existing bilateral swap and repo lines and helped address possible euro liquidity needs.

4 For the ECB, the change in total assets was comparable to the change in 2011-12 during the sovereign debt crisis.

Central banks in some AEs implemented several other measures to address exchange rate risks and foreign-currency liquidity shortage. Many countries set up additional forex-liquidity swap facilities or raised the tenors, frequency and volumes of existing facilities (e.g. Israel and New Zealand). In addition, several country-specific measures were taken to facilitate the borrowing of financial institutions in US dollars (for instance in Norway, South Korea and Sweden).⁵

Prudential regulation was eased to support credit

Relevant authorities in many AEs took numerous prudential measures to support bank lending (OECD 2020a). Actions included lowering counter-cyclical or systemic risk capital buffers; allowing banks to temporarily operate below required capital and liquidity levels; delaying implementation of new stricter regulatory measures, stress testing and regulatory reporting; easing collateral eligibility rules; allowing banks to apply more favourable valuation of assets and lower risk weights for certain loans; and providing more flexibility with the treatment of non-performing loans. Prudential supervisors in many countries encouraged banks to help borrowers affected by the pandemic to restructure loans and grant moratoria on loan repayments to small businesses and individuals, with potentially large effects on financial stability and monetary policy transmission (Capponi et al. 2021).⁶

ASSESSMENT OF THE POLICY RESPONSE

Monetary policy helped stabilise financial markets

The rapid and sweeping responses by central banks helped restore calm in financial markets (IMF 2020). The measures resulted in a massive increase in market liquidity, contributing to easing stress in financial markets and minimising risks of a systemic financial meltdown. Financial asset prices and volatility largely normalised. According to some estimations, the ensuing drop in interest rates could explain nearly half of the rebound in equity prices in the United States and a fifth in the euro area (Avalos and Xia 2020). Tensions also eased in the corporate sector, with large firms successfully tapping markets to raise cash and/or build buffers, and corporate bond spreads reverting to their pre-crisis level for investment-grade borrowers. In 2020, both investment- and non-investment-grade firms in AEs issued bonds at a record pace, almost entirely at the longer end of the maturity spectrum (BIS 2020). The relative stability of financial markets was achieved even if some announced liquidity and lending support measures

5 Norway and Sweden increased banks' ability to borrow in US dollars against collateral. The South Korean authorities facilitated funding in foreign exchange by raising the cap on foreign exchange forward positions, temporarily suspending the 0.1% tax on short-term non-deposit foreign exchange liabilities of financial institutions, and temporarily reducing the minimum foreign exchange liquidity coverage ratio for banks.

6 For instance, in the United States, mortgage forbearance on all mortgages backed by Ginnie Mae and the two government sponsored enterprises is estimated to have prevented approximately 900,000 foreclosure filings and concomitant house price drops of up to 9% (Capponi et al. 2021).

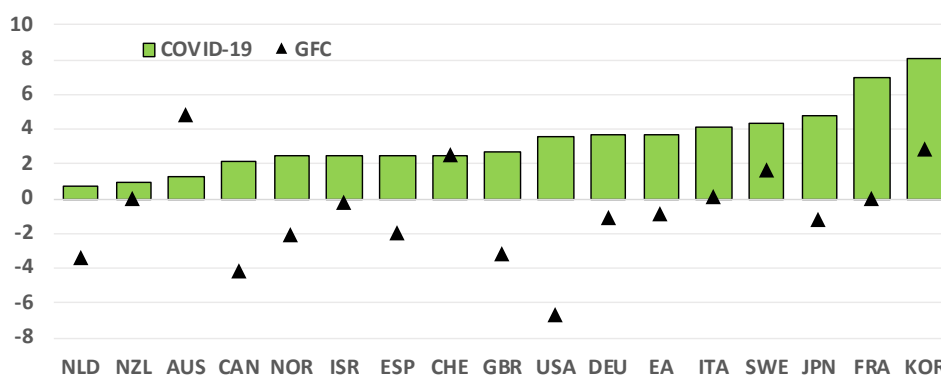
were used to a limited extent by end-2020, especially in the United States (OECD 2020b). This experience suggests that the credible announcement of generous and wide-ranging liquidity measures is useful to calm markets during severe turmoil.

Credit growth was broadly sustained

Credit to the private non-financial sector continued to increase in the first three quarters of 2020, in many countries in contrast to the GFC (Figure 4). Nevertheless, bank lending standards tightened temporarily in Europe, Japan and the United States, though not to the same extent and for a much shorter period than during the GFC.

FIGURE 4 CREDIT TO THE PRIVATE SECTOR EXPANDED IN SPITE OF FINANCIAL TURMOIL AND RECESSION

Percentage change in bank credit to the private non-financial sector



Note: COVID-19 refers to the change between 2019Q4 and 2020Q3. GFC refers to the change over three quarters from the peak between 2008Q2 and 2009Q1.

Source: Bank for International Settlements; and authors' calculations.

Two favourable factors supported positive credit developments. First, central banks' swift and large easing (in particular, direct programmes to support bank lending and liquidity in the financial system and prudential measures) together with government loan guarantee schemes contributed substantially to sustaining credit flows to businesses and households.⁷ Findings from the empirical literature suggest that the observed close coordination between monetary policy and prudential measures should have sizeable amplification effects on lending (Altavilla et al. 2020). Second, banks were not the root cause of the turmoil and had larger capital and liquidity buffers than prior to the GFC.

⁷ For instance, in the euro area, based on average elasticities from the empirical and model-based literature, the June 2020 TLTRO operation alone has the potential to avert at least 3 percentage points of a loan volume decline over the period 2020-22 and prudential relief measures grant a capital relief of 1.5 percentage points, which could increase lending growth by up to 2.2 percentage points a year (Altavilla et al. 2020).

In general, banks resisted the 2020 shock well (Bank of Japan 2020, Lagarde 2020, Quarles 2020). Thanks to the policy support, fewer companies went bankrupt and non-performing loans (NPLs) increased less than in previous recessions (OECD 2021a).

However, NPLs and bank profitability, and thus banks' ability to lend, could deteriorate further if economic activity in hard-hit sectors remains subdued or contracts further (owing to – unexpectedly at this stage – a prolonged pandemic), or if government support is withdrawn too early in the recovery. Such risks are particularly relevant for Europe, where banks appeared weaker in some countries prior to the pandemic and where the economic recovery is expected to be slower than in the United States (OECD 2021b). Low bank equity values and price-to-book ratios, which remain significantly below pre-crisis levels, especially in the euro area, illustrate the challenging outlook for banks well.

The monetary policy impact on inflation remains uncertain

It is too early to assess the impact of monetary policy stimulus on inflation. In most AEs, inflation declined in the first half of 2020 but picked up at the turn of the year in line with the evolution of oil prices, though it has remained below pre-pandemic levels. Prices – in particular, of energy and food – have been volatile due to crisis-related idiosyncrasies and measurement issues, making the identification of underlying price pressures difficult. Uncertainty about inflation measurement increased in all economies. Many services were not provided due to strict containment measures and their prices were extrapolated by statistical offices, leading in some cases to an upward bias (Bureau of Labor Statistics 2020, Eurostat 2020, O'Brien et al. 2021).⁸ In contrast, significant temporary changes to consumption patterns, which were not reflected in weights used to calculate the consumer price index, resulted in an underestimation of inflation.⁹ Moreover, altered seasonal sales and temporary VAT changes (in Germany and several other euro area countries) added to inflation volatility.¹⁰

In the main AEs, measures of inflation compensation derived from financial market indicators, in particular bond yield differentials, declined significantly at the peak of financial turmoil, reflecting elevated uncertainty about the economic and health outlook and the large drop in oil prices. In the later part of 2020 and early 2021, inflation compensation measures recovered but remained below the average levels in the two or

8 For instance, according to INSEE, in France, close to 45% of prices in April were not directly observed and had to be imputed from other prices. In the case of prices of travel-related services in the euro area, price imputation implied that measured inflation reflected developments in past data from more normal times and did not reflect the downturn in these sectors fully, leading to higher inflation persistence (O'Brien et al. 2021).

9 For instance, in France, the annual price increase in April 2020 would have been 1.1 percentage points higher if the CPI weights had reflected the change in the structure of consumption (e.g. a 70-90% decline in transport, accommodation/catering and fuel consumption) rather than keeping the pre-Covid-19 consumption basket (INSEE 2020, Gautier et al. 2020). Such an upward bias is estimated at 0.2 percentage points for the whole euro area (Kouvavas et al. 2020), 0.4 percentage points in the United Kingdom (NIESR 2020), and 0.7 percentage points in the United States (Cavallo 2020).

10 For instance, in Italy, due to the delay of summer sales by one month, annual inflation temporarily increased by 1.2 percentage points in July; similar patterns were observed in January and February 2021. The temporary reductions of VAT in the euro area, primarily in Germany, are estimated to have lowered HICP inflation in July by around 0.7 percentage points (Koester et al. 2020), and the reversal of tax changes added a similar amount to euro area inflation in January 2021.

three years preceding the crisis in Canada, the euro area, Japan, Sweden and the United Kingdom. Only in the United States did they surpass 2019 levels, partly reflecting inflation risks related to a sizeable fiscal stimulus in the context of the recently adopted flexible form of average inflation targeting by the Federal Reserve.

In contrast, household inflation expectations increased in several AEs. This is not surprising as consumers with a pessimistic assessment of their own or the country-wide economic or financial situation tend to have high inflation expectations (Ehrmann et al. 2017). Moreover, in the context of the Covid-19 crisis, a shift in consumption patterns induced by the containment measures might have strengthened the influence of food prices on formation of inflation perceptions and expectations, as food prices and their share in the consumption basket increased in many countries.¹¹ In the crisis environment, higher household inflation expectations on their own are not likely to boost consumption as predicted by theoretical models (OECD 2020c, Bachmann et al. 2015). In the longer term, managing household inflation expectations to boost demand and inflation may prove difficult. Household inflation expectations do not respond much to monetary policy communications (Coibion et al. 2020a, Coibion et al. 2020b).

In the short and medium term, inflation is likely to be volatile and temporarily higher due to the rise in commodity prices, in particular oil, and the continuation of some one-off effects such as altered seasonal sales. Inflation may also go up due to a combination of possible negative supply-side effects (for instance related to higher operating costs due to virus containment regulations, disruptions to global value chains or increased bankruptcies), and, in the United States, strong demand supported by large fiscal stimulus.

In the longer term, sustaining higher inflation, without significant policy change, is uncertain given a long-lasting combination of structural disinflationary factors. These factors relate to the production and distribution of goods and services, firms' business models and demand structure, limiting pressures on aggregate inflation and leading to persistent and large relative price changes of certain categories of goods and services (OECD 2020c). The persistence of such forces, which are largely beyond the sole influence of monetary policy and its communications, had made attaining inflation targets before the pandemic challenging.

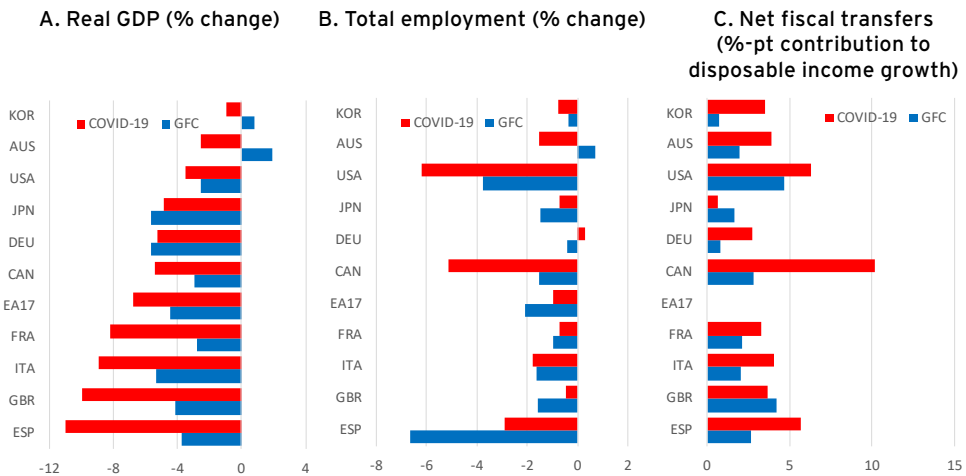
Fiscal policy benefited largely from monetary policy stimulus

An easy monetary policy stance in AEs in the aftermath of the GFC helped to lower government debt servicing outlays, despite rising debt in most countries (Figure 5). The renewed stimulus during the Covid-19 period has strengthened this trend. Thus, while pursuing inflation and other statutory objectives, monetary authorities created space for counter-cyclical fiscal measures, which have usually high multipliers during recessions,

11 Households tend to form their views about aggregate inflation from few frequently purchased items, such as petrol, electricity and processed food (Coibion et al. 2020a).

especially when monetary policy is accommodative (Christiano et al 2011, Auerbach and Gorodnichenko 2012, Glocker et al 2019), and public investment, which can have beneficial longer-term effects on growth. This was a welcome development as monetary policy stimulus on its own could not have dealt with the large and highly asymmetric pandemic shock, given already low pre-crisis interest rates (Kiley 2020). Thanks to the combined monetary and fiscal stimulus, including job retention schemes, in many AEs, the decline in employment was moderate given the large fall in real GDP and compared with the GFC (Figure 5). In addition, household disposable income did not drop and its growth was largely explained by the positive contribution of net fiscal transfers. Also, the number of bankruptcies turned out to be lower than in the previous recessions – in some AEs, it was even lower than in the years preceding the Covid-19 crisis.

FIGURE 5 EMPLOYMENT AND DISPOSABLE INCOME HAVE HELD WELL GIVEN THE LARGE FALL IN GDP



Note: GFC refers to the change between 2008 and 2009 during the global financial crisis. COVID-19 refers to the change between 2019 and 2020. For disposable income and fiscal net transfers, Economic Outlook 108 estimates for 2020 are taken where official data are not yet available.

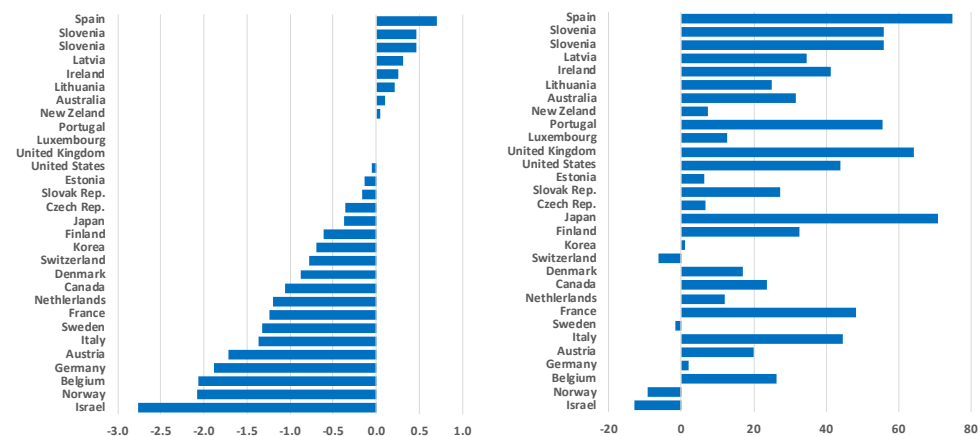
Source: OECD Economic Outlook 108 database.

The ensuing faster recovery in output and employment will help raise inflation closer to central banks' targets and minimise scarring effects. Consequently, stronger nominal economic growth and lower unemployment, especially when supported by structural reforms, will help alleviate fiscal challenges related to high debt-to-GDP ratios (OECD 2016a). Nevertheless, elevated government debt may pose challenges for monetary policy. Any future monetary policy normalisation to pre-GFC levels should inflation increase, even if very distant in time, would augment government debt-servicing costs. Sustained or brutal increases in interest rates could trigger tightening of the fiscal policy stance

where debt remains elevated, with negative implications for growth.¹² Therefore, it is essential that policy sequencing is right, with fiscal policy normalisation gradual and contingent on the state of the economy, and not before monetary policy normalisation. Such sequencing would ensure that monetary policy normalisation only happens when the economic slack is largely eliminated and thus posing durable pressure to increase prices. For this, a credible public finances trajectory is necessary, to ensure monetary policy remains accommodative throughout fiscal policy and growth normalisation (Eichenbaum 2019).

FIGURE 6 GOVERNMENT DEBT SERVICING EXPENSES HAVE DECLINED IN MANY OECD COUNTRIES

Changes in the ratios of interest payments (left) and gross government liabilities (right) to GDP between 2007 and 2019



Source: OECD Economic Outlook 108 database; and authors' calculations.

FUTURE CHALLENGES FOR CENTRAL BANKS

Prolonged monetary policy support, although necessary in the context of the most severe global downturn since the Great Depression, will likely increase the pre-crisis monetary policy challenges, requiring policy adjustments in different domains.

¹² While the pass-through of market interest rates to effective debt-servicing costs is gradual, persistently higher interest rates can have a substantial direct impact on the budget balance. With government debt at 100% of GDP, a 1 percentage point increase in interest rates would, *ceteris paribus*, lower the budget balance by 1% of GDP. Also, high private debt could have large negative effects on private demand when the monetary policy stance is tightened (indebted demand) and reduce neutral interest rates, limiting the scope for an effective accommodation of future negative shocks (Mian et al. 2020).

The transmission of monetary policy may become less effective in a persistent low-interest environment. This could involve a weaker bank lending channel (Borio and Gambacorta 2017). Low or negative interest rates and flat yield curves could affect banks' profitability and balance sheets negatively and thus reduce their willingness and capacity to lend. Heightened levels of non-performing loans, which can peak only after state guarantees expire, will require strict prudential supervision, effective and fast insolvency procedures and possibly a development of distressed-debt markets and bad banks. In this context, once the recovery advances, capital and liquidity buffers will also need to be gradually rebuilt and the effective prudential regulation easing at the onset of the crisis will have to be gradually reversed. As has been clearly demonstrated during the Covid-19 crisis, a sound financial system is key for effective monetary policy transmission and economic resilience during downturns. The authorities should not use the crisis as an excuse to roll back regulatory reforms, compromising common international standards and an international level playing field (FSB 2020).

In some European countries, the low-interest rate environment would aggravate pre-crisis challenges of high non-performing loans and long-standing structural problems of low cost efficiency, limited revenue diversification and bank overcapacity (ECB 2018). Bank overcapacity could be reduced by completing the banking union and removing barriers to cross-border mergers and acquisitions. Investing in digital technologies could also reduce cost inefficiency in the longer term; such investment could be supported by incentives from a prudential treatment of software assets in the capital framework.

A prolonged period of low interest rates could increase risk-taking further, with negative implications for financial and economic stability. Low interest rates could undermine the profitability of financial institutions, pushing them to invest in riskier assets. While effective prudential regulation can reduce financial vulnerabilities in the regulated sectors, it has a limited impact on risk-taking in the non-bank financial sector. As seen in the Covid-19 crisis, vulnerabilities in the non-bank financial sector amplified adverse shocks and increased financial stability risks (FSB 2020).

Low interest rates also undermine the solvency of pension funds and insurance companies. In particular, low discount rates increase the present value of liabilities of defined-benefit pension funds and life insurance companies (OECD 2015, 2016b).¹³ This calls for offsetting measures by financial institutions. For instance, insurance companies have already begun to lower guaranteed returns, but the adjustment of the stock of all outstanding contracts is slow. Lower returns on retirement saving could also dampen consumption if households decided to offset a fall in their expected accumulated wealth

13 The adverse effects of low interest rates for pension funds are greater for funds that already had unfunded liabilities before the crisis. Funding gaps of pension funds have risen since the GFC, and were already at around 30% of total assets in the United Kingdom and the United States in the mid-2010s, aggravating challenges stemming from gains in longevity (IMF 2016).

for retirement with current higher saving. Improving sustainability of pension systems – both private and public – may require more fundamental reforms, for instance raising the retirement age in proportion to growing life expectancy.

The expected crisis-related increase in government debt and central bank assets may lead to perceptions of eroded central bank independence, with potential negative implications for de-anchoring of inflation expectations. To minimise such risks, fiscal and monetary authorities should articulate their communication. Engineering such articulation is an area for further research, but a clear state-contingent fiscal trajectory would allow monetary policy to continue to support fiscal policy until growth has gained enough momentum and fiscal policy normalises. In contrast, tightening monetary policy too early in the recovery would risk too early tightening of fiscal policy, and derail the recovery. For instance, the ECB recently suggested some articulation between the effective lower bound and fiscal framework as necessary for inflation to converge to target, especially acknowledging that the effective lower bound might happen more frequently (Schnabel 2021).

CONCLUSIONS

Monetary and fiscal policy responses to the current crisis have been massive, swift and extraordinary. There are historical reasons to worry about the extraordinary actions taken by central banks and fiscal authorities. These concerns may also evolve with the recovery. But there are also good reasons to believe that these extraordinary responses may have preserved the fabric of economies in such a way that a strong recovery may unfold as the health crisis recedes. Provided fiscal policies shift to support investment and structural policies help lift the dynamics of advanced economies, the combined action of monetary and fiscal authorities may finally address the secular stagnation that plagued these economies and signal the beginning of more favourable trends.

REFERENCES

- Altavilla, C, F Barbiero, M Boucinha and L Burlon (2020), “The great lockdown: pandemic response policies and bank lending conditions,” ECB Working Paper Series No. 2465.
- Auerbach, A J and Y Gorodnichenko (2012), “Measuring the Output Responses to Fiscal Policy”, *American Economic Journal: Economic Policy* 4(2): 1-27.
- Avalos, F and D Xia (2020), “The short and long end of equity prices during the pandemic. Valuations and the shift in interest rates”, Box B in *BIS Quarterly Review*, 14 September.
- Bachmann, R, T O Berg and E R Sims (2015), “Inflation Expectations and Readiness to Spend: Cross-Sectional Evidence”, *American Economic Journal: Economic Policy* 7(1): 1-35.
- Bank of Japan (2020), *Financial System Report*, 22 October.

BIS – Bank for International Settlements (2020), “Search for yield sustains buoyant markets”, *BIS Quarterly Review*, 7 December.

Borio, C and L Gambacorta (2017), “Monetary policy and bank lending in a low interest rate environment: Diminishing effectiveness?”, BIS Working Papers, No. 612, February.

Bureau of Labor Statistics (2020), “Effects of COVID-19 Pandemic on BLS Price Indexes”, April 7.

Capponi, A, R Jia and D A Rios (2021), “The Effect of Mortgage Forbearance on Refinancing: Evidence from the COVID-19 Period”, mimeo, 6 February.

Cavallo, A (2020), “Inflation with Covid Consumption Baskets”, NBER Working Paper No. 27352.

Christiano, L, M Eichenbaum and S Rebelo (2011), “When Is the Government Spending Multiplier Large?”, *Journal of Political Economy* 119(1): 78-121.

Coibion, O, Y Gorodnichenko, E S Knotek II and R Schoenle (2020a), “Average Inflation Targeting and Household Expectations”, Federal Reserve Bank of Cleveland Working Paper 20-26.

Coibion, O, Y Gorodnichenko, S Kumar and M Pedemonte (2020b), “Inflation Expectations as a Policy Tool?”, *Journal of International Economics* 124.

ECB – European Central Bank (2018), *Financial Stability Review*, November.

Ehrmann, M, D Pfajfar and E Santoro (2017), “Consumers’ Attitudes and Their Inflation Expectations”, *International Journal of Central Banking*, February.

Eichenbaum, M (2019), “Rethinking Fiscal Policy in an Era of Low Interest Rates”, Barcelona GSE Lecture, 16 May.

Eurostat (2020), “Guidance on the Compilation of the HICP in the Context of the COVID-19 Crisis”, Methodological Note, Directorate C, Unit C4, 3 April.

FOMC – Federal Open Market Committee (2020), “Minutes of the Federal Open Market Committee, June 9–10, 2020”, Federal Reserve.

FSB – Financial Stability Board (2020), “COVID-19 Pandemic: Financial Stability Impact and Policy Responses. Report submitted to the G20”, Financial Stability Board, 17 November.

Gautier, E, Y Ulgazi and P Vertier (2020), “Inflation and households’ inflation expectations during the Covid-19 pandemic”, Eco Notepad, Post No. 171, Banque de France, 17 July.

Glocker, C and G Sestieri and P Towbin (2019), “Time-Varying Fiscal Spending Multipliers in the UK”, *Journal of Macroeconomics* 60.

IMF – International Monetary Fund (2016), *Fostering Stability in a Low-Growth, Low-Rate Era*, Global Financial Stability Report, October.

IMF (2020), “A Greater set of Policy Options to Restore Stability”, Chapter 2 in *Bridge to Recovery*, Global Financial Stability Report, October.

INSEE – National Institute of Statistics and Economic Studies (2020), *Consommation des ménages*, Note de conjoncture française, 27 May.

Kiley, M T (2020), “Pandemic Recession Dynamics: The Role of Monetary Policy in Shifting a U-Shaped Recession to a V-Shaped Rebound”, Finance and Economics Discussion Series 2020-083, Board of Governors of the Federal Reserve System.

Koester, G, F. Dreher and A Vlad (2020), “The role of indirect taxes in euro area inflation and its outlook”, Box in *ECB Economic Bulletin* 6/2020.

Kouvavas, O, R Trezzi, M Eiglsperger, B Goldhammer and E Gonçalves (2020), “Consumption patterns and inflation measurement issues during the COVID-19 pandemic”, Box in *ECB Economic Bulletin* 7/2020.

Lagarde, C (2020), “IMFC Statement”, at the 42nd meeting of the International Monetary and Financial Committee, 15 October.

Mian, A R, L Straub and A Sufi (2020), “Indebted Demand”, NBER Working Paper No. 26940.

NIESR – National Institute of Economic and Social Research (2020), “The Lockdown Weighted inflation CPILW for May 2020”.

O’Brien, D, C Dumoncel and E Gonçalves (2021), “The role of demand and supply factors in HICP inflation during the COVID-19 pandemic – a disaggregated perspective”, Box in *ECB Economic Bulletin* 1/2021.

OECD – Organisation for Economic Co-operation and Development (2015), “Can Pension Funds and Life Insurance Companies Keep their Promises?”, Chapter 4 in *OECD Business and Finance Outlook*, pp. 111-147.

OECD (2016a), “Using the fiscal levers to escape the low-growth trap”, Chapter 2 in *OECD Economic Outlook*, Volume 2016, Issue 2.

OECD (2016b), *OECD Economic Outlook*, Volume 2016, Issue 2.

OECD (2020a), “General assessment of the macroeconomic situation”, Chapter 1 of *OECD Economic Outlook*, Volume 2020, Issue 1.

OECD (2020b), “General assessment of the macroeconomic situation”, Chapter 1 of *OECD Economic Outlook*, Volume 2020, Issue 2.

OECD (2020c), “Issue Note 3. Post-financial- crisis changes to monetary policy frameworks: Driving factors and remaining challenges”, in Chapter 2 of *OECD Economic Outlook*, Volume 2020, Issue 2.

OECD (2021a), “COVID-19 crisis and banking system resilience: Simulation of losses on nonperforming loans and policy implications”.

OECD (2021b), *OECD Interim Economic Outlook*, 9 March.

Quarles, R K (2020), “Remarks at the Hoover Institution”, Stanford, CA, 14 October.

Schnabel, I (2021), “Unconventional fiscal and monetary policy at the zero lower bound”, Keynote speech at the Third Annual Conference organised by the European Fiscal Board on “High Debt, Low Rates and Tail Events: Rules-Based Fiscal Frameworks under Stress”, 26 February.

ABOUT THE AUTHORS

Laurence Boone is the OECD Chief Economist and G20 Finance Deputy. Previously, she was Chief Economist at AXA Group. She was on the board of Kering and remains a member of the Strategic committee of Agence France Trésor. She is a member of the Cercle des Economistes as well as of SDA Bocconi.

Prior to this, she was Special Advisor to the President of the French Republic; Chief Economist and MD at Bank of America Merrill Lynch; MD and Chief Economist, Barclays Capital; Economist, OECD; Economist, CEPII, France and Quantitative Analyst, Merrill Lynch Asset Management.

Łukasz Rawdanowicz is a Senior Economist in the Macroeconomic Policy Division of the OECD’s Economics Department, heading a macroeconomic policy unit. He previously worked at the European Central Bank in Frankfurt and the Center for Social and Economic Research in Warsaw. He is one of the main authors of the *OECD Economic Outlook*. He has written numerous papers on issues related to monetary and fiscal policies.

CHAPTER 20

The year the power of central bank balance sheets was unleashed

341

Athanasios Orphanides¹

MIT Sloan School of Management

INTRODUCTION

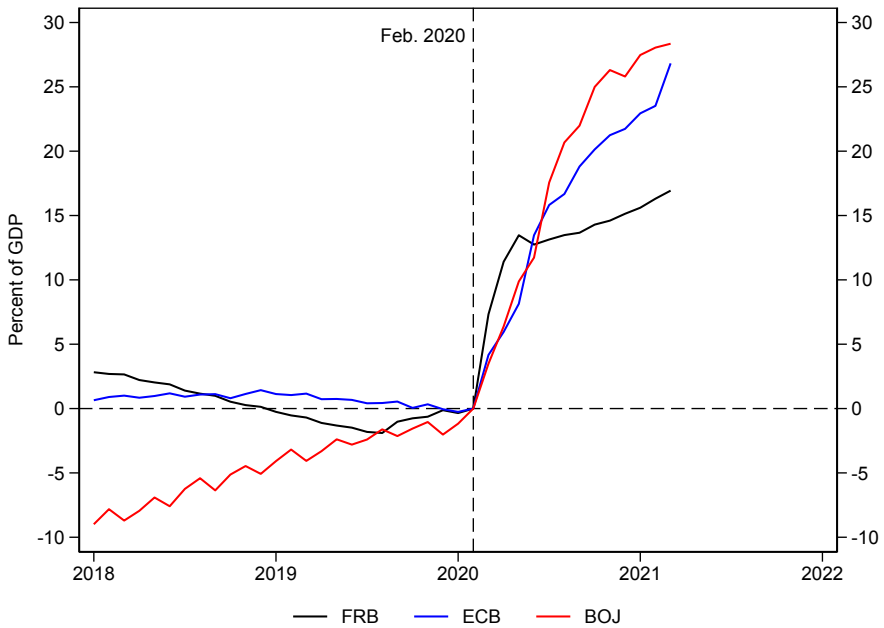
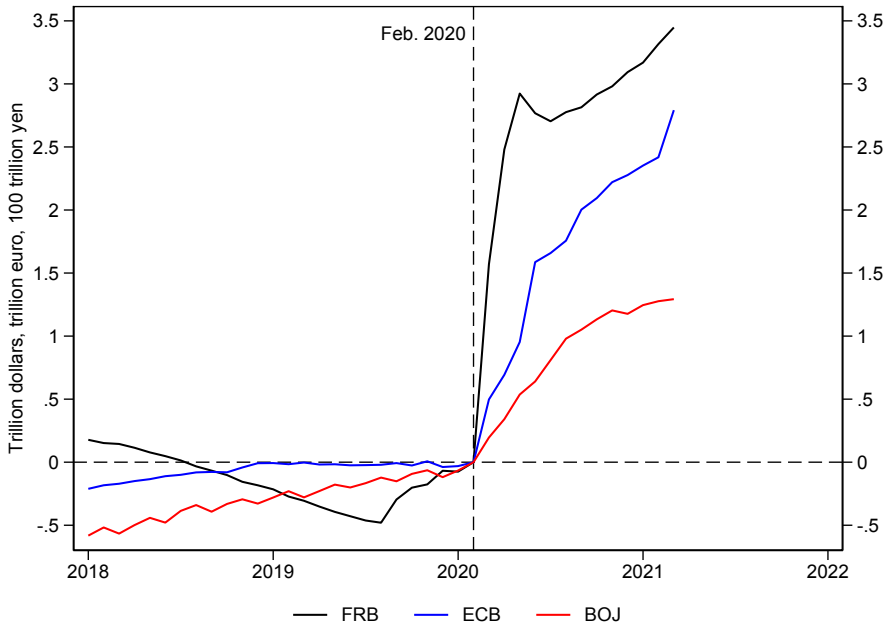
Between March and June 2020, the Federal Reserve expanded its balance sheet by \$3 trillion dollars. In three months, the Fed ‘printed’ as much high-powered money as it did over the first 100 years of its history, from 1913 to 2013.² The Fed was not alone; the Bank of Japan (BOJ) and the European Central Bank (ECB) engineered similarly massive balance sheet expansions (Figure 1). These central banks enlarged their balance sheets by creating reserves out of thin air, a power that central banks always have in a fiat currency regime. The balance sheet expansions generated monetary firepower in the range of 15% to 25% of GDP. These resources were mobilised to help governments finance the response to the Covid-19 pandemic, to support households and businesses, to promote economic growth, and to avert deflation – 2020 was the year the power of central bank balance sheets was unleashed.

Under ordinary circumstances, such unprecedented money printing would be cause for alarm. When misused, the power of central bank balance sheets can wreak havoc on the economy – excessive money printing will invariably lead to high inflation. Large balance sheets may also pose other challenges and add risks to financial stability. Ordinarily, large balance sheet expansions are not needed for monetary control. When faced with an economic crisis or a deflationary shock, the central bank could engineer a sizeable cut in its policy interest rate and provide adequate support to the economy without a noticeable expansion of its balance sheet.

1 I would like to thank Bill English, Greg Hess and Yvan Lengwiler for helpful discussions and comments.

2 The word ‘printed’ is in quotation marks because, in the 21st century, little of the high-powered money created with balance sheet expansions involves printing currency notes.

FIGURE 1 CHANGE IN SIZE OF CENTRAL BANK BALANCE SHEETS SINCE FEBRUARY 2020



Note: In the bottom panel, balance sheets are scaled by the nominal GDP produced over the previous four quarters.

Source: FRB St Louis FRED, ECB SDW, and author calculations.

When a central bank's interest rate policy is hampered by the zero lower bound (ZLB), however, a prompt and decisive balance sheet expansion is the indicated policy response to a deflationary shock. Issuing reserves and using them to purchase assets and/or provide liquidity that encourages lending is an effective means of providing monetary accommodation without reducing the overnight interest rate. Balance sheet expansions can be used to compress interest rate spreads, reduce term premia, and boost asset prices – all operations that can reduce the costs of financing for households and businesses, and support aggregate demand.³ Through reducing the cost of financing for governments, balance sheet expansions can also accommodate additional expansionary fiscal policy, without an associated deterioration of public finances. A balance sheet expansion can serve as a substitute for short-term interest rate reductions both directly, by reducing longer-term yields, and indirectly, by enabling additional fiscal accommodation (Hofmann et al. 2021). At the ZLB, what might otherwise appear to be irresponsible money printing becomes an essential feature of monetary policy to avert a prolonged economic slump. And such were the circumstances facing the central banks of the three largest advanced economies right before the global pandemic was declared in March 2020.

This chapter reviews some key policy decisions by the Fed, the ECB and BOJ since the onset of the pandemic that highlight the power of central bank balance sheets.⁴

THREE ENCOUNTERS WITH THE ZERO LOWER BOUND

To understand the rationale behind the massive balance sheet expansions observed during 2020, and why they were warranted, it is useful to briefly revisit two earlier encounters with the ZLB over the past quarter century, in February 1999 and September 2008 (Figure 2). The experience with these two earlier episodes was an important factor in the design and calibration of policy during 2020.

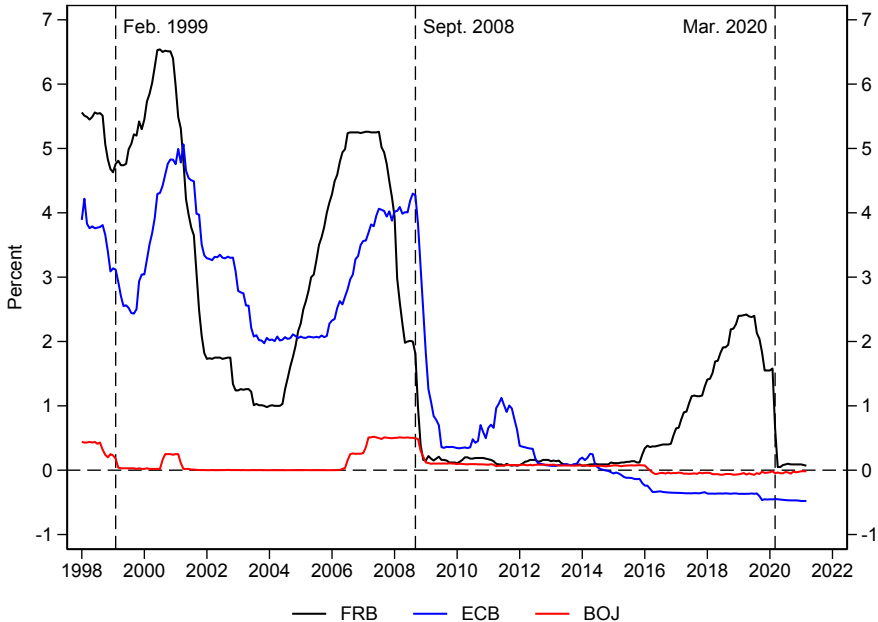
The first episode, which affected only the BOJ, occurred in the aftermath of the Asian financial crisis of the late 1990s. The resulting soft patch in the global economy prompted monetary policy easing around the world. By the end of 1998, the Fed, the newly established ECB, and the BOJ were all cutting interest rates. The Japanese economy was experiencing a more significant economic downturn than the other economies and could have benefited from additional monetary easing, but the BOJ faced a constraint. By February 1999, it had run out of room for interest rate policy cuts. The BOJ adopted a zero interest rate policy (ZIRP) and yet could not provide as much monetary policy accommodation as the Fed or the ECB did. At the time, monetarist economists urged the BOJ to provide additional accommodation through QE.⁵ The BOJ eventually did implement QE (with a delay), but the moderate deflation observed in Japan during the

3 Bernanke (2020) reviews these monetary policy tools. The accommodative effect of purchases of long-term government debt by the central bank, the canonical form of quantitative easing (QE), was first proposed by Keynes in 1930 to counteract the 'slump' that followed the 1929 crash (Orphanides 2004).

4 The analysis draws on Orphanides (2021).

5 "Time to print money" was the suggestive title of an article authored by Alan Meltzer in April 1998.

FIGURE 2 OVERNIGHT INTEREST RATES



Note: The interest rates plotted are the federal funds rate, Eonia, and the uncollateralised call rate for the Fed, ECB and BOJ, respectively.

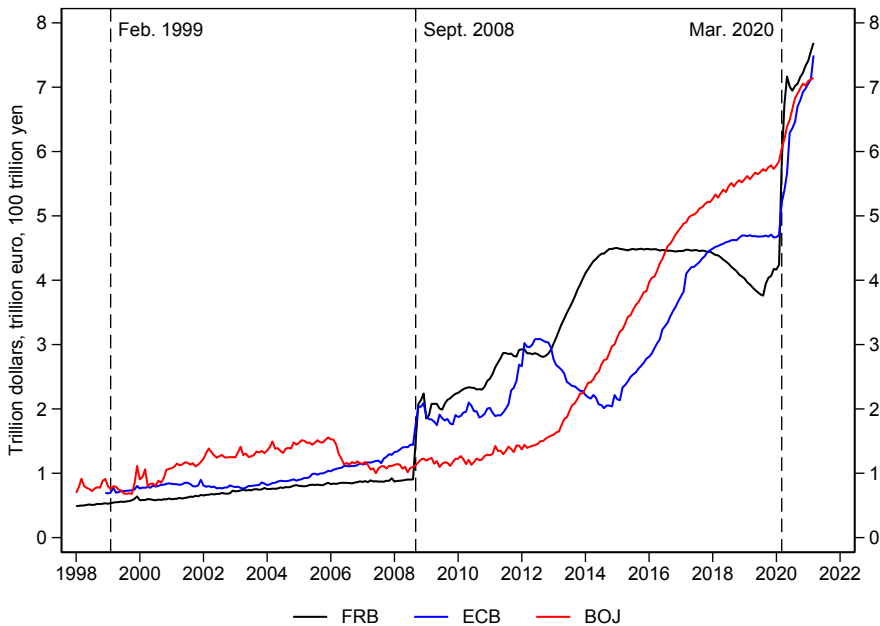
Source: FRB St Louis FRED, ECB SDW, and BOJ.

In contrast to the BOJ, in the early 2000s the Fed and ECB managed to navigate macroeconomic disturbances in a manner that maintained low and stable inflation at around 2%, in line with their objectives, without an encounter with the ZLB. However, the Japanese experience prompted a review of options for easing monetary policy at the ZLB, which was put into use soon after.⁶

The second episode is associated with the Global Financial Crisis (GFC) that followed the decision by US authorities to let Lehman Brothers collapse in September 2008. Within days of that decision and facing the spectre of an economic collapse comparable to the Great Depression of the 1930s, the Fed, the ECB and the BOJ lowered interest rates towards the ZLB and over time developed supportive balance sheet policies (Figure 3).

6 For work at the Fed, see Clouse et al. (2003) and references therein. The ECB studied the ZLB challenge in the context of the monetary policy strategy review it undertook in 2003 (Issing 2003).

FIGURE 3 SIZE OF CENTRAL BANK BALANCE SHEET



Source: FRB St Louis FRED, ECB SDW, and BOJ.

At first, the Fed and ECB balance sheet expansions that started in September 2008 served primarily as a crisis management tool – for example, providing liquidity to stressed financial institutions and supporting dysfunctional markets. Nonetheless, they also provided additional monetary policy accommodation that was badly needed when the ZLB was reached. (Crisis management measures were already being implemented before the Lehman collapse through changes in the composition of central bank balance sheets without an overall expansion.) Historical records suggest that if the ZLB were not binding, the federal funds rate would have been cut by several percentage points.⁷ Although similar confidential meeting material for this period is not available for the ECB and BOJ, prescriptions of simple interest rate policy rules suggest similar conclusions.

Balance sheet expansions can serve as an imperfect substitute for additional policy easing at the ZLB. The experience with balance sheet policies accumulated after the GFC helped refine estimates of the pertinent multipliers.⁸ However, the policy multipliers associated with balance sheet policies are subject to greater uncertainty than those associated with interest rate policy. This multiplicative uncertainty argues for a more cautious and

⁷ The Fed makes historical material related to FOMC meetings available on its website with a five-year lag; see "Transcripts and other historical materials" (www.federalreserve.gov/monetarypolicy/fomc_historical.htm).

⁸ See Doniger et al (2019) for an informative exercise that shows how changes in the balance sheet and changes of short-term policy interest rates can be calibrated to yield nearly identical effects on macroeconomic outcomes such as inflation and economic growth.

gradualist approach to balance sheet expansions when the ZLB is first encountered, an explanation that was suggested as early as 2000 for the demonstrated reluctance of the BOJ to embark on a sizeable QE policy in 1999 (Orphanides and Wieland 2000).

The three central banks followed noticeably different paths in expanding their balance sheets after the GFC (Figure 3). The Fed was the most systematic of the three. It expanded its balance sheet in stages, with the more decisive expansion starting at the end of 2012, as it recognised that the earlier programmes had proved too timid relative to what was needed to support the recovery most effectively and raise inflation towards 2%. The BOJ, which had the largest balance sheet (relative to GDP) among the three central banks, was initially reluctant to enlarge it further at a fast pace. The absence of decisive balance sheet expansion and very limited interest rate easing (just 50 basis) pushed the Japanese economy back to mild deflation. By 2013, the macroeconomic risks of this approach were recognised, and the BOJ adopted a far more aggressive QE policy aiming to slowly raise inflation towards 2%.

Compared to the Fed and the BOJ, the ECB's balance sheet policy followed a rather peculiar pattern. The ECB expanded its balance sheet similarly to the Fed at first, but then decided to reverse the expansion and pursued a policy of quantitative tightening from mid-2012 to end-2014, shrinking its balance sheet by one third. While the reasons for this policy error are not entirely clear, the ECB faced unusual legal challenges against asset purchases during this period which may have influenced its decisions (Lengwiler and Orphanides 2020). A significant part of the ECB's balance sheet expansion from 2010 to 2012 was due to self-liquidating long-term refinancing operations (LTROs) that provided long-term liquidity to financial institutions at favourable terms. To ensure that its balance sheet would have continued to expand, as was necessary to support the economy, the ECB needed to either replace this liquidity when these facilities expired or expand its asset purchase programmes. While it could have easily implemented additional asset purchases, it delayed doing so for over two years, while continuing quantitative tightening in the meantime. This policy resulted in an unwelcome decline in underlying inflation. By the time the ECB started expanding its balance sheet once again in 2015, inflation expectations were disanchored. The ECB's asset purchases were not as vigorous as they needed to be to reverse this disanchoring of inflation expectations and, consequently, the problem of low inflation persisted. Subsequently, in 2018, the ECB decided to end its QE policy prematurely, even though euro area inflation remained too low.

To provide additional monetary accommodation, the BOJ and ECB also decided to adopt negative interest rate policies (NIRP) and pushed overnight interest rates to somewhat below zero. By 2016, the BOJ went even further, and implemented a policy of yield curve control. With this policy, the BOJ explicitly controls the ten-year government bond yield close to zero, while ensuring that government bond yields at shorter maturities are slightly negative.

Despite the unprecedented monetary easing and balance sheet expansions that followed the encounter with the ZLB, inflation in the 2010s remained lower than desired in all three economies. Of the three central banks, the Fed came closest to reflating the economy in line with its 2% inflation goal. Guided by inflation projections suggesting policy normalisation was appropriate, in 2015 the Fed embarked on a gradual process of removing monetary policy accommodation, first by modestly raising the federal funds rate in a series of small steps and then by gradually reducing its balance sheet. However, in 2019 the Fed realised that inflation outcomes were persistently below their projections and slightly below the Fed's 2% inflation goal. Following an adjustment of its policy stance, by the start of 2020 the federal funds rate stood at approximately 1 5/8%.

Inflation outcomes were even more disappointing for the ECB and BOJ. Following the adoption of its aggressive balance sheet expansion in 2013 and yield curve control in 2016, the BOJ managed to escape deflation but the process of raising inflation towards 2% proved much slower than it had anticipated, as reflected in its inflation projections. Similarly, the ECB's inflation projections also proved consistently optimistic. At the start of 2020, both ECB and BOJ policy rates remained negative and both central banks needed to maintain a policy of aggressive accommodation to ensure slow progress towards reflating their economies.

The two earlier encounters with the ZLB coloured the policy response to the pandemic. In retrospect, monetary policy proved less accommodative than it was believed to be in real time. One of the lessons drawn from the experience of the 1990s and 2010s was that the natural real rate of interest had declined more than had been recognised before the GFC. Judging from the evolution of Federal Open Market Committee (FOMC) participants' assessment of the natural rate of interest (provided by the Fed in the quarterly "Summary of Economic Projections"), estimates of the natural real rate declined by about 200 basis points during the 2010s. Though similar information for ECB and BOJ policymakers is unavailable, natural rates in the three economies would be reasonably expected to co-move, suggesting a similar challenge for all three central banks. These estimates of the natural rate suggested the ZLB would be more binding in the future, necessitating more aggressive application of balance sheet policies.

The slow learning of the decline in the natural rates during the 2010s also meant that policymakers had misjudged the stance of policy accommodation for several years. By January 2020, inflation was lower than policymakers in all three central banks would have preferred and there was little room for the Fed, and effectively no room for the ECB and BOJ, to cut rates in response to a deflationary shock.

POLICY EASING AND CRISIS MANAGEMENT WITH BALANCE SHEET POLICIES IN MARCH 2020

The forceful balance sheet expansions engineered by the Fed, the ECB and the BOJ in the spring of 2020 reflected the recognition that while considerable monetary policy easing was needed to respond to the pandemic, the room for interest rate policy easing was severely limited or non-existent.

Figure 4 provides a visual summary of interest rate policy during the first few months of 2020. The figure plots daily data for the two-year overnight index swap (OIS) rate for the dollar, euro and yen. These rates provide simple measures of the expected interest rate policy over the next two years for the Fed, ECB and BOJ, respectively. Figures 5 and 6 similarly track daily developments in the stock and corporate bond markets. As such, they summarise market participants' views of the deterioration of economic prospects as the seriousness of the pandemic was recognised and the success of the global policy response in tacking the challenge. All three figures have vertical lines on 3 March and 23 March. Most of the decisions taken by the three central banks examined below were taken during this interval.

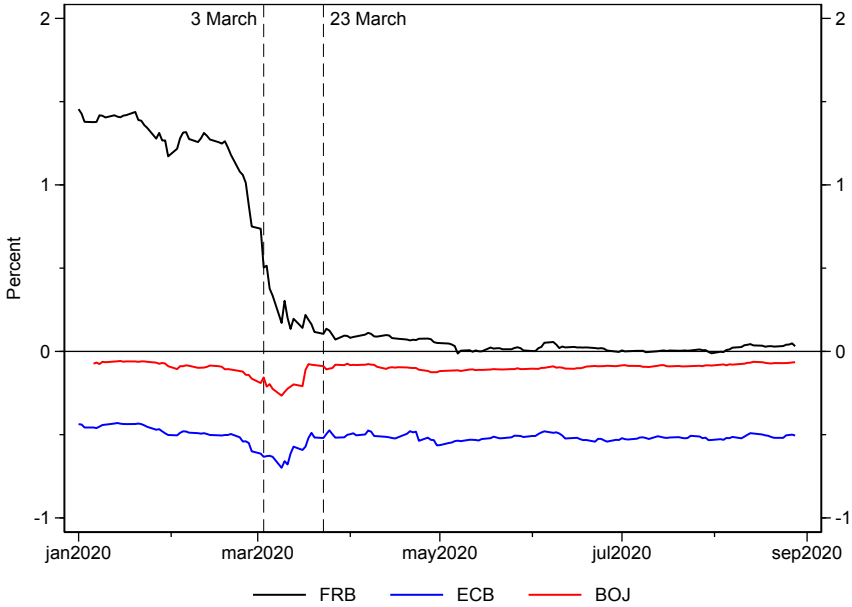
As can be seen from Figures 5 and 6, market jitters already appeared in late February, with stock prices declining and risk spreads notably widening. And in Figure 4 we can see the evolution of interest rate easing expectations. By late February, investors expected the Fed to cut rates but that the ECB and BOJ would leave policy rates unchanged at their slightly negative levels.

In an unscheduled meeting on 3 March, the Fed delivered a 50-basis point reduction of the federal funds rate from about $1\frac{5}{8}$ to $1\frac{1}{8}$. By then, the two-year OIS rate was well below 1%, suggesting more easing was expected. This first easing proved insufficient to arrest the deterioration reflected in the prices of stocks and corporate bonds.

At the conclusion of its regularly scheduled meeting on 12 March, the ECB announced a series of balance sheet easing measures, with an emphasis on liquidity provision, along the lines of programmes it had developed in the aftermath of the GFC. However, the overall market sentiment was that the communication did not deliver the assurance of decisive action needed to ease market participants' concerns about the fragility of the euro area.

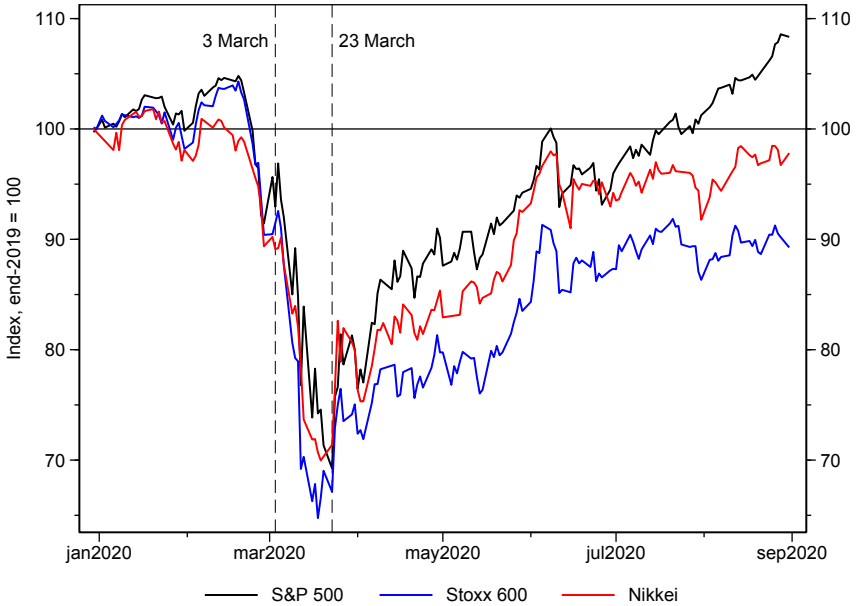
Following yet another unscheduled meeting, on Sunday 15 March at 5pm the Fed announced its return to the ZLB with a reduction of the federal funds rate by the remaining 100 basis points it had available. It further announced an increase in the purchases of Treasury securities and agency mortgage-backed securities (the tools it had employed for most of its balance sheet expansion after the GFC) and additional liquidity measures supporting the flow of credit to households and businesses (FRB 2020a, 2020b).

FIGURE 4 INTEREST RATE POLICY SPACE: TWO-YEAR OIS RATE IN DOLLARS, EURO AND YEN



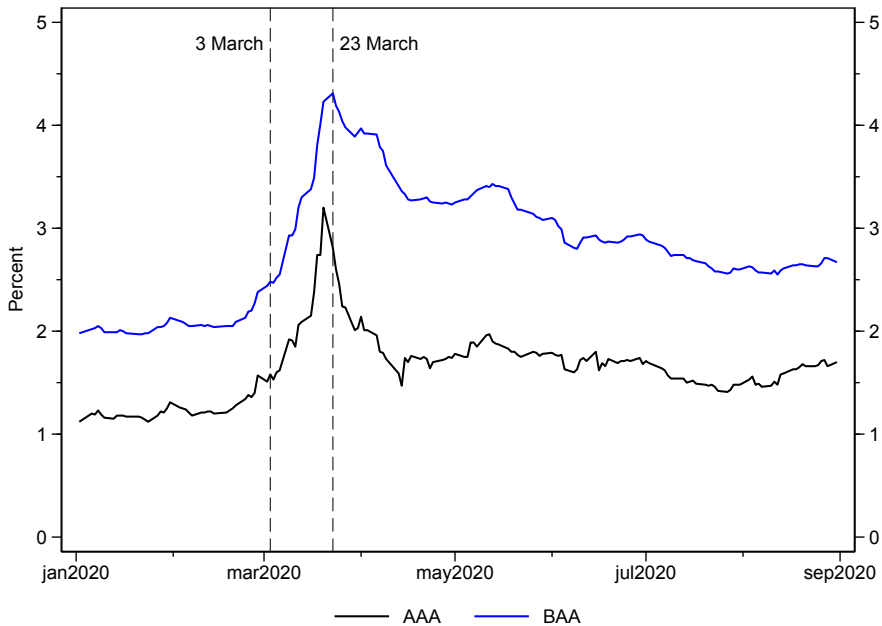
Source: Bloomberg.

FIGURE 5 EQUITY INDEXES



Source: FRB St Louis FRED, Bloomberg and author calculations.

FIGURE 6 SPREAD OF MOODY'S BAA AND AAA CORPORATE BOND YIELDS OVER TEN-YEAR TREASURY



Source: FRB St Louis FRED and author calculations.

Simultaneously with these announcements, the Fed also announced a coordinated central bank action to enhance the provision of dollar liquidity via the standing swap line arrangements (FRB 2020c). This was a critical demonstration of global central bank cooperation, along the lines of arrangements that proved immensely successful during the GFC. Joining the Fed, the ECB, and the BOJ were the Bank of Canada, the Bank of England and the Swiss National Bank.

By the time this announcement was made in Washington on Sunday afternoon, it was already Monday morning in Tokyo. The BOJ announced that it had moved its scheduled meeting that was meant to start two days later and grasped the opportunity to announce a series of additional easing measures together with the coordinated swap line arrangements. These measures included additional purchases of government bonds, corporate bonds, exchange traded funds (ETFs) and Real Estate Investment Funds (J-REITs). In addition, the BOJ introduced special funds-supplying operations to facilitate corporate financing (BOJ 2020). In effect, the BOJ aggressively employed its balance sheet to effectively backstop not only government securities but also private assets.

On 18 March, the ECB announced the Pandemic Emergency Purchase Programme (PEPP). This represented a new policy innovation that was well received by market participants. As discussed below, it provided temporary relief to market concerns about the euro area's fragility.

Between 17 and 22 March, the Fed announced a series of additional easing measures, including funding facilities and the establishment of temporary swap lines with nine other central banks, and funding facilities.

These measures by the three central banks were quite important steps for providing financial support during an episode of intense stress and undoubtedly averted a greater deterioration of market sentiment than was observed. Yet, despite the onslaught of global policy action during the first three weeks of March, equity and credit markets continued to deteriorate.

Market sentiment turned on 23 March. Stock prices rallied and corporate bond spreads tightened notably following a series of new measures announced by the Federal Reserve that underscored the Fed's resolve to serve as a backstop not only to government securities, as it had already been doing, but also to private credit. Using its authority under Section 13(3) of the Federal Reserve Act, which can be utilised under "unusual and exigent circumstances", the Fed established the Primary Market Corporate Credit Facility (PMCCF) for new bond and loan issuance and the Secondary Market Corporate Credit Facility (SMCCF) to provide liquidity for outstanding corporate bonds (FRB 2020d). The Fed would stand ready to purchase newly issued corporate debt and support trading in previously issued debt.

Arguably the most important aspect of these programmes was eligibility. The Fed announced that it was ready to backstop corporate debt issued by businesses with an investment-grade credit rating (BBB). Crucially, on 9 April the Fed clarified that debt that was eligible on 22 March would remain eligible for these programmes even if it were subsequently downgraded.

By announcing a commitment to use its balance sheet to backstop private credit instruments, including 'fallen angels', the Fed effectively short-circuited the downward spiral in bond and equities. As can be seen in Figures 5 and 6, after 23 March, market conditions improved. Remarkably, this critical policy did not require a significant increase in the Fed's balance sheet. For the most part, its stabilising effect was due to the Fed's commitment to employ the power of its balance sheet as a backstop. By doing so, the Fed protected against markets converging to an adverse self-fulfilling dynamic that would have otherwise posed the threat of inflicting significant damage to the economy.

THE ECB'S PREDICAMENT

Unlike the Fed and the BOJ, the ECB has the misfortune of serving a monetary union of a confederation of sovereign states. As a result of the political complexity and incomplete governance of the euro area, ECB balance sheet policies since the GFC have been hampered by their distributional effects and the conflicting interests of euro area member states (Orphanides 2020). The ECB is more independent and has greater discretionary authority than either the Fed or the BOJ, but must navigate through these conflicting

political interests and legal challenges in setting a common policy for the euro area. The ECB's record from the GFC and until the onset of the pandemic was decidedly mixed. Its policies succeeded in averting a costly breakup of the euro, but also contributed to the fragility of the euro area and an unwelcome divergence of economic outcomes across member states.

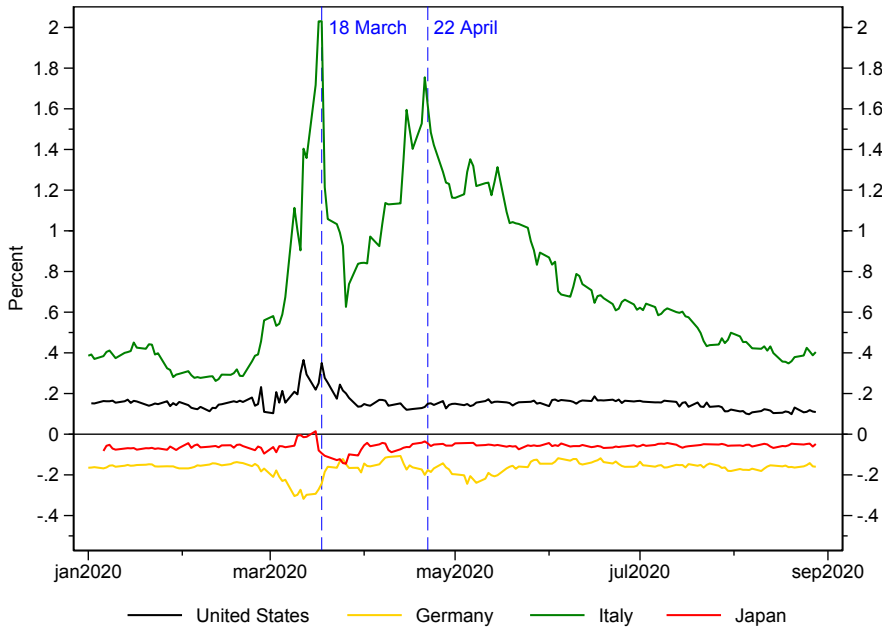
The main cause of fragility in the euro area has been the uneven transmission of monetary policy across member states since the GFC. This has caused recurrent episodes of stress in government bond markets, with the pandemic being the latest example. Figure 7 plots the spreads of two-year government bond yields over OIS rates for the US, Japan, and two of the largest euro area member states – Germany and Italy. These spreads can provide information about episodes when monetary policy transmission is impaired. Ordinarily, they should be very small and fairly stable even during a crisis. With a smooth monetary policy transmission mechanism, changes in current and expected interest rate policy over the next two years are reflected, effectively one-for-one, in government bond yields with similar maturity. With an uneven transmission, these spreads reflect additional premia. Despite a common currency and the common ECB monetary policy, the resulting differential pricing of sovereign debt across euro area member states results in vastly different financing costs for households and businesses across euro area member states.

As can be seen in the figure, the euro area experienced another intense, though short-lived, episode of fragility in March and April of 2020. The policy easing measures announced by the ECB at its regularly scheduled meeting on 12 March did not have the desired effects because the ECB failed to address this fragility. At the press conference following the meeting, President Lagarde roiled markets further by stating that the ECB was “not here to close spreads”.

The ECB subsequently took two important decisions (on 18 March and 22 April) aiming to tackle this fragility head on.

The first of the two was the announcement of the PEPP on 18 March. The PEPP entailed significant new asset purchases that would be explicitly targeted so as to “counter the serious risks to the monetary policy transmission mechanism” (ECB 2020a). This was a meaningful change from the ECB's earlier asset purchases programmes. The new policy was initially well received by markets.

However, as is evident in Figure 7, spreads started to widen again soon after. The widening continued even after 23 March when, as discussed earlier, global stock and bond prices started recovering from their troughs. By mid-April, as global markets were improving, the ECB faced yet another euro crisis episode.

FIGURE 7 SPREAD OF 2-YEAR GOVERNMENT BOND YIELDS OVER OIS RATE

Source: Bloomberg and author calculations.

The underlying cause of this fragility is a fundamental flaw embedded in the ECB's policy implementation strategy that had not been addressed by either the PEPP or any other earlier decision – eligibility.

The problem can be traced to a decision taken before the GFC regarding the eligibility of government debt for the ECB's monetary policy operations.⁹ Specifically, the ECB decided to delegate the determination of the eligibility of government debt for its monetary operations to credit rating agencies. Although this was apparently not appreciated at the time, this decision introduced destabilising cliff effects in the ECB's collateral framework. In turn, these cliff effects introduced the possibility of multiple self-fulfilling expectational equilibria, with the potential to induce sovereign debt crises and defaults that would not otherwise arise (Lengwiler and Orphanides 2021). In addition to losing collateral eligibility, downgrades could make a member state's government debt ineligible for inclusion in the ECB's asset purchase programmes. Thus, while the PEPP was meant to counter the impairment of the monetary policy transmission, a rating downgrade could render a member state's government debt ineligible for the programme. Coupled with the deteriorating outlook for government debt dynamics in all member states due to the pandemic, another euro crisis episode was unavoidable without a change in eligibility criteria.

⁹ Additional historical background and the ECB rationale for this decision are provided in Orphanides (2020).

On 22 April, the ECB finally addressed this source of fragility.¹⁰ It announced that it would grandfather the eligibility of marketable assets used as collateral in its credit operations, and thus the eligibility for its asset purchase programmes (ECB 2020b). In essence, the ECB suspended the delegation of the determination of eligibility of government debt (as well as other securities) to credit rating agencies. The government debt of member states would continue to retain eligibility as collateral and for inclusion in asset purchase programmes, even if it were downgraded. With this decision, the ECB effectively employed the power of the central bank's balance sheet as a backstop that could protect the euro area from self-fulfilling adverse equilibria and yet another euro crisis episode.

CONCLUSION

Balance sheet policies are more challenging for central banks than interest rate policies. They are more uncertain and may pose greater financial stability risks. They have more pronounced fiscal and distributional effects. They raise more difficult governance questions. Nevertheless, considering the current low interest rate environment, and the implied limited room to employ interest rate cuts to respond to a crisis or deflationary shock, they are also essential.

With their actions during 2020, the Fed, ECB and BOJ demonstrated the incredible power of central bank balance sheets, by leveraging this power to defend their economies from worse outcomes than would have otherwise materialised. Nonetheless, challenges remain.

For the BOJ, the aggressive use of balance sheet policies has been beneficial in supporting the economy, although it has not yet succeeded in raising inflation sufficiently. The reasons for this slower than anticipated progress remains a topic for debate.

For the Fed, the activation of Section 13(3) powers, which now requires the agreement of the Treasury Secretary, poses new challenges. The Treasury provided first-loss equity investments that protected the Fed's balance sheet from potential losses associated with some of its new facilities. But this arrangement has eroded the Fed's authority to activate the power of its balance sheet independently. It remains to be seen whether this poses a threat to the Fed's political independence.

For the ECB, the outlook remains most challenging. By adopting temporary measures to employ the power of its balance sheet to backstop government debt (as the Fed and BOJ do), the ECB managed to tackle the fragility of the euro area better than in the aftermath of the GFC. An important unresolved question is whether the ECB will

¹⁰ According to the ECB Statute, the eligibility criteria for monetary policy operations fall squarely within the discretionary authority of the ECB Governing Council (Lengwiler and Orphanides 2020).

manage to transform these temporary measures to policies that can promote stability on a continuing basis in the euro area, or whether it will decide to revert to the pre-pandemic regime of perpetual fragility.

REFERENCES

Bank of Japan (2020), “Enhancement of monetary easing in light of the impact of the outbreak of the novel coronavirus (COVID-19)”, press release, 16 March (www.boj.or.jp/en/announcements/release_2020/k200316b.pdf).

Bernanke, B (2020), “The new tools of monetary policy”, *American Economic Review* 110(4): 943-983 (www.aeaweb.org/articles?id=10.1257/aer.110.4.943).

Clouse, J, D Henderson, A Orphanides, D Small, and P Tinsley (2003), “Monetary policy when the nominal short-term interest rate is zero”, *Journal of Macroeconomics* 3(1): Article 12 (<https://doi.org/10.2202/1534-5998.1088>).

Doniger, C, J Hebden, L Pettit, and A Skaperdas (2019), “Substitutability of monetary policy instruments”, FEDS Notes, 19 July (<https://doi.org/10.17016/2380-7172.2284>).

European Central Bank (2020a), “ECB announces €750 billion Pandemic Emergency Purchase Programme (PEPP)”, press release, 18 March (www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1-3949d6f266.en.html).

European Central Bank (2020b), “ECB takes steps to mitigate impact of possible rating downgrades on collateral availability”, press release, 22 April (www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200422_1-95e0f62a2b.en.html).

Federal Reserve Board (2020a), “Federal Reserve issues FOMC statement”, press release, 15 March (www.federalreserve.gov/newsevents/pressreleases/monetary20200315a.htm).

Federal Reserve Board (2020b), “Federal Reserve actions to support the flow of credit to households and businesses”, press release, 15 March (www.federalreserve.gov/newsevents/pressreleases/monetary20200315b.htm).

Federal Reserve Board (2020c), “Coordinated central bank action to enhance the provision of U.S. dollar liquidity”, press release, 15 March (www.federalreserve.gov/newsevents/pressreleases/monetary20200315c.htm).

Federal Reserve Board (2020d), “Federal Reserve announces extensive new measures to support the economy”, press release, 23 March (www.federalreserve.gov/newsevents/pressreleases/monetary20200323b.htm).

Hofmann, B, M Lombardi, B Mojon and A Orphanides (2021), “Fiscal and monetary policy interactions in a low interest rate world”, working paper.

Issing, O (2003), “Evaluation of the ECB’s monetary policy strategy”, press seminar, 8 May. (www.ecb.europa.eu/press/pressconf/2003/html/iso30508_1.en.html).

Lengwiler, Y and A Orphanides (2020), “Options for the ECB’s monetary policy strategy review”, Study PE 652.753, European Parliament ([www.europarl.europa.eu/RegData/etudes/STUD/2020/652753/IPOL_STU\(2020\)652753_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2020/652753/IPOL_STU(2020)652753_EN.pdf)).

Lengwiler, Y and A Orphanides (2021), “Collateral Framework: Liquidity premia and multiple equilibria”, CEPR Discussion Paper 16047 (https://cepr.org/active/publications/discussion_papers/dp.php?dpno=16047).

Meltzer, A (1998), “Time to print money,” *Financial Times*, 17 July.

Orphanides, A (2004), “Monetary policy in deflation: the liquidity trap in history and practice”, *North American Journal of Economics and Finance* 15(1): 101-124 (<https://doi.org/10.1016/j.najef.2003.12.001>).

Orphanides, A (2020), “The fiscal-monetary policy mix in the euro area: Challenges at the zero lower bound,” *Economic Policy* 35(103): 461-517 (<https://doi.org/10.1093/epolic/eiaa017>).

Orphanides, A (2021), “The power of central bank balance sheets”, paper prepared for the 2021 BOJ-IMES Conference.

Orphanides, A and V Wieland (2000), “Efficient monetary policy design near price stability”, *Journal of the Japanese and International Economies* 14: 327–65 (<https://doi.org/10.1006/jjie.2000.0452>).

ABOUT THE AUTHOR

Athanasios Orphanides is a Professor of the Practice of Global Economics and Management at the MIT Sloan School of Management and Co-Chair of the Board of Governors of the Asia School of Business.

Before joining MIT Sloan, he held positions at central banks in the United States and in Europe. From May 2007 to May 2012, he served a five-year term as Governor of the Central Bank of Cyprus and was a member of the ECB Governing Council. Following the creation of the European Systemic Risk Board in 2010, he was elected a member of its first Steering Committee. Earlier, he served as Senior Advisor at the Board of Governors of the Federal Reserve System, where he had started his professional career as an economist.

CHAPTER 21

Emerging markets during Covid-19: Unconventional policies and financial markets

357

**Dimitris Drakopoulos, Rohit Goel, Evan Papageorgiou, Dmitri Petrov,
Patrick Schneider and Can Sever¹**

International Monetary Fund

Covid-19 is a crisis like no other. It is more complex, more uncertain, and truly global relative to past crises (Georgieva 2020). It brought a synchronised and deep global recession where world GDP shrank by 3.5% in 2020, the worst peacetime contraction since the Great Depression (Gopinath 2021, IMF 2021a). The pandemic is still ongoing across the globe. As of February 2021, the number of new cases is decreasing in some countries, but the pandemic is far from being contained in some others. Approval of vaccines in late 2020 raised expectations for a faster global recovery, while renewed waves and new variants of the virus pose new challenges for the outlook (IMF 2021b).

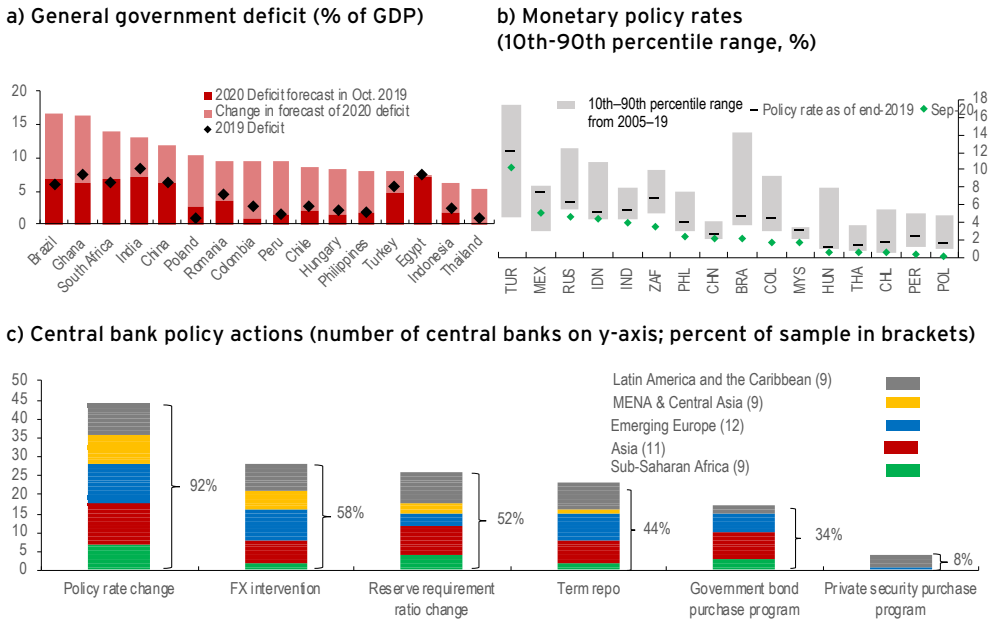
The recovery may be longer than previously expected, highly uncertain and uneven across countries (Gopinath 2020). Until vaccines are available widely, economic output and financial markets will mostly depend on monetary and fiscal policy support. Thus, support measures should continue amid significant downside risks and exceptional levels of uncertainty (IMF 2021a). A careful consideration of the effectiveness and potential costs of support measures is needed though. In this regard, this chapter focuses on the effectiveness and potential risks of unconventional policy measures implemented by emerging market (EM) central banks – i.e. asset purchase programmes – during the Covid-19 pandemic.

The pandemic has hit EMs hard, with a large 2.4% decline in economic output in 2020, meaning 6.0 percentage points lower growth rate relative to 2019 (IMF 2021b). EM policymakers have reacted forcefully and swiftly to the unprecedented shock. Most governments have increased spending for emergency measures and transfers to support healthcare systems and the livelihoods of households and firms (Figure 1, panel a). Central banks have operationalised a set of tools to stabilise financial markets and help keep them functioning. Over 90% of central banks have cut policy rates since March 2020, to all-time lows in some cases (Figure 1, panel b). In addition to rate cuts, many

¹ The views expressed in this chapter are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

EM central banks have taken measures to provide liquidity to the banking system and launched asset purchase programmes for the first time, making this a truly unique policy response (Figure 1, panel c). This chapter shows empirical evidence on the effectiveness of such programmes and discusses their potential risks in case of future shocks. It also illustrates the degree of the stress in local financial markets during the Covid-19 shock, based on a novel index.

FIGURE 1 EMERGING MARKET POLICY RESPONSES TO THE COVID-19 SHOCK (FROM MARCH TO SEPTEMBER 2020)



Notes: The sample in panel 3 comprises 50 central banks from non-advanced economies. FX = foreign exchange; MENA = Middle East and North Africa.

Sources: Bloomberg Finance L.P.; IMF, Central Bank Intervention database; IMF, World Economic Outlook database; and IMF staff calculations.

LOCAL MARKET STRESS - LARGER IN BOND MARKETS THAN FX

It is important to measure the stress in local financial markets to inform policymakers. For this purpose, we introduce a novel market conditions index, which we call a *local stress index* (LSI), that allows us to assess the stress in local bond and currency markets (IMF 2020b). The LSI is a summary indicator for local market conditions that can help guide central bank decisions regarding the need for, and extent of, interventions to support local market functioning. Unlike other financial conditions indices, which can loosen or tighten via changes in policy rates or external spreads (reflecting the cost of funding), the LSI specifically focuses on local market liquidity and stress indicators (e.g. bid-offer spreads, realised volatility, and other risk premium measures).

The level of stress in local markets during the Covid-19 sell-off, as measured by the LSI, was comparable to that of the global financial crisis (GFC), but the period of stress was considerably shorter and has improved sharply as well. Furthermore, the level of stress was well above that of previous episodes, such as the euro crisis, the 2013 ‘taper tantrum’ and 2014–15 stress episodes (Figure 2, panels a and b).

Focusing on the currency (FX) and bond components of the LSI, the stress in FX markets (Figure 2, panel c) was lower than during the 2008–09 period, with less noticeable demand for dollar liquidity. For instance, increases in measures such as risk reversals – indicating the level of hedging demand for a depreciation against the dollar – have been more muted. In addition, a larger cross-currency basis – a measure of dollar funding liquidity stress – was more short-lived. These facts could have been driven by developments such as:

1. the establishment of central bank swap line facilities and bond repo facilities for foreign central banks by the Federal Reserve and the ECB; or
2. structural shifts in the operation of FX markets since the GFC (Schrimpf and Sushko 2019), including increased turnover in EM currencies.

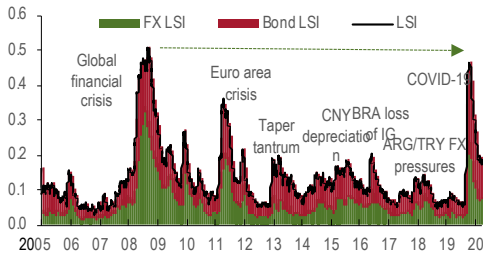
Unlike FX markets, local bond market stress was higher than during the GFC (Figure 2, panel d), which eventually triggered policy responses by EM central banks in the form of asset purchase programmes. An important point to note is the increase in the risk premiums of long-end government bonds relative to short-end bonds and onshore swap rates. Although asset purchase programmes appeared to help the bond market stress decline (discussed in the next section), stress levels have been elevated. Several factors could have contributed to this fact, such as:

1. local bond supply risks weighing on yields through risk premiums,
2. lower foreign flows to local bond markets dragging liquidity; or
3. limited depth of local currency government bond markets, particularly in some EMs.

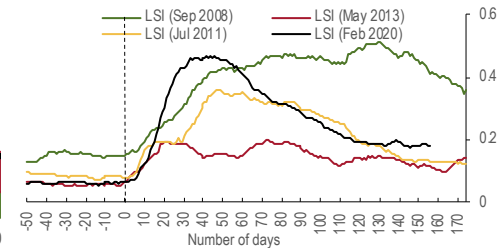
In contrast to currencies, local bonds have still been traded domestically to a large extent, and market depth has not matched greater foreign participation, which could bring additional volatility (IMF 2020a). In EMs with a shallower domestic investor base, domestic banks are the major liquidity providers in times of stress.

FIGURE 2 STRESS IN THE LOCAL CURRENCY BOND AND FX MARKETS

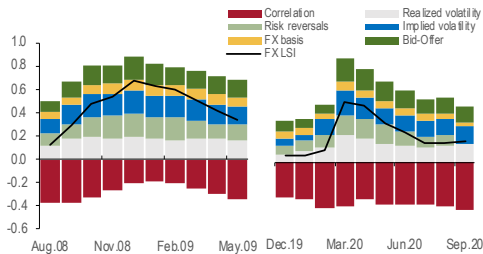
a) Emerging market local stress index (LSI)



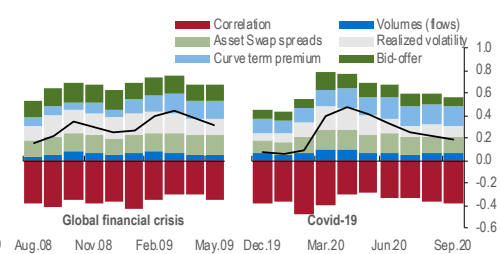
b) Emerging market local stress index (dates in parentheses are day 0)



c) FX LSI and sub-components



d) Local bond LSI and sub-components



Notes: The local stress index (LSI) is calculated from the country LSIs of 16 countries. FX = foreign exchange; GFC = global financial crisis.

Sources: Bloomberg Finance L.P.; and IMF staff calculations.

CENTRAL BANK ASSET PURCHASES: AN UNCONVENTIONAL RESPONSE TO A NEW SHOCK

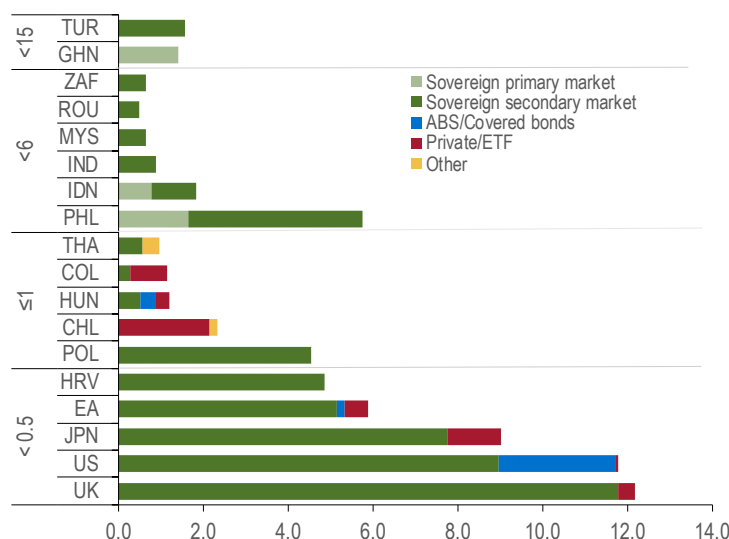
Asset purchase programmes have traditionally been used by EM central banks for regular open market operations. During the Covid-19 crisis, however, for the first time on a broad basis, EM central banks have adopted unconventional policies in the form of asset purchase programmes targeting government or private sector bonds in local currency, sometimes used with relatively high policy rates. Since March 2020, close to 20 EM central banks have engaged in asset purchases in some form (Figure 3), with the peak volume and breadth of countries coming in April 2020. Central bank bond holdings still remained modest in most cases relative to advanced economies.

The synchronised emergence these asset purchase programmes and their intended objectives were new, revealing the extent of unprecedented policy actions by EM central banks. In several cases, the purchases were sterilised, which mitigated downward pressures on EM exchange rates. The scope and motivation of these programmes varied across economies, and the objectives were often multifaceted. The policy objectives of those purchases can be summarised in three main categories:

1. Central banks with policy rates well above zero (India, South Africa, Philippines) tended to operationalise asset purchases as a tool to improve bond market functioning.
2. Central banks with policy rates closer to the zero lower bound (Chile, Poland, Hungary) partly aimed for a course similar to advanced economy central banks, using the purchases to ease local financial conditions, to provide monetary stimulus, to improve market functioning and for liquidity purposes.
3. Some central banks (Ghana, Guatemala, Indonesia, the Philippines) explicitly mentioned that one of their objectives was to temporarily ease government financing pressure during the pandemic.

FIGURE 3 CENTRAL BANK ASSET PURCHASES IN EMERGING MARKETS

Asset purchases by country and asset (percent of GDP, data through October)



Note: ABS = asset-backed securities; APP = asset purchase program; ETF = exchange-traded fund.

Sources: Bloomberg Finance L.P.; Haver Analytics; national sources; World Bank; and IMF staff calculations.

ASSET PURCHASES LOWERED BOND YIELDS AND MARKET STRESS

In a recent paper [Sever et al. \(2020\)](#), we empirically analyse the effects of EM asset purchase programme announcements during the Covid-19 pandemic on bond and currency markets. Event studies based on daily data shows that the announcements had an immediate impact on asset prices and helped turn sentiment around, with a corresponding reduction in government bond yields and term premiums, but with relatively limited impact on currencies (Figure 4, panels a, b and c). In order to account

for the effect of global and exogenous factors on end-of-day levels, we go a step further and use intra-day data in separate event study exercises. Event studies using intra-day data for a few countries also point to a similar pattern, with a decline in government bond yields but less impact on currencies.

We also explore the effect of domestic asset purchase programme announcements on ten-year local currency government bond yields and currency markets using regression analyses. We aim to observe the effect of domestic announcements conditional on potential effects of global factors and other actions by EM central banks on these markets. To do so, we use daily data from 13 EMs between January and mid-May, and local projections methodology (Jordà 2005, Teulings and Zubanov 2014). This analysis allows us to capture the full dynamics of yields and currencies following the announcements. We estimate the effect of domestic asset purchase programme announcements, after controlling for (i) domestic policy rate cuts; and (ii) the global factors, such as the QE announcement by the Federal Reserve or the VIX (proxying global risk appetite).

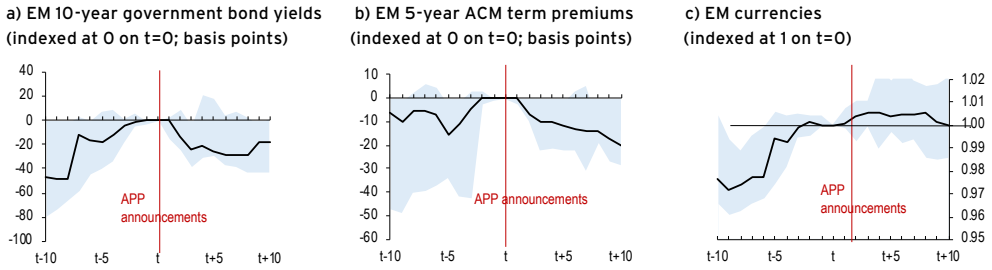
Results from local projections regressions suggest that EM central bank announcements decreased long-end bond yields (Figure 5, panel a). The effect was persistent and remained statistically significant for upwards of six trading days in the aftermath of the announcements. The size of the impact of APP announcements on yields ranged from 20 to 60 basis points within a one standard error confidence interval.²

The local projection analyses also show that the QE announcement by the Federal Reserve was followed by lower EM yields likewise, and a higher VIX index was followed by higher EM yields. These point to global factors still having a significant impact on yields, conditional on local asset purchase programme announcements. This is consistent with the extant literature showing evidence of the spillovers from US monetary policy, and also global financial conditions, to EM financial markets in the pre-Covid-19 period (e.g. Bruno and Shin 2015, di Giovanni et al. 2017, Albagli et al. 2019). Lastly, domestic policy rate cuts do not appear to have had much effect on yields during the Covid-19 pandemic, controlling for other variables.

On the other hand, announcements of asset purchase programmes did not lead to a significant depreciation of EM currencies (Figure 5, panel b), as suggested by the event studies (Figure 4, panel c). This may reflect the relatively small scale of those programmes and the fact that the purchases were sterilised in some cases. Furthermore, the restoration of stability and the decisive actions taken by advanced economies and EM central banks could have contributed to investor confidence and a reversal of the earlier considerable FX sell-off.

² We also show that the asset purchase programme announcements had less effect on equity markets. For additional results, more details on the analyses and robustness checks, see Sever et al. (2020).

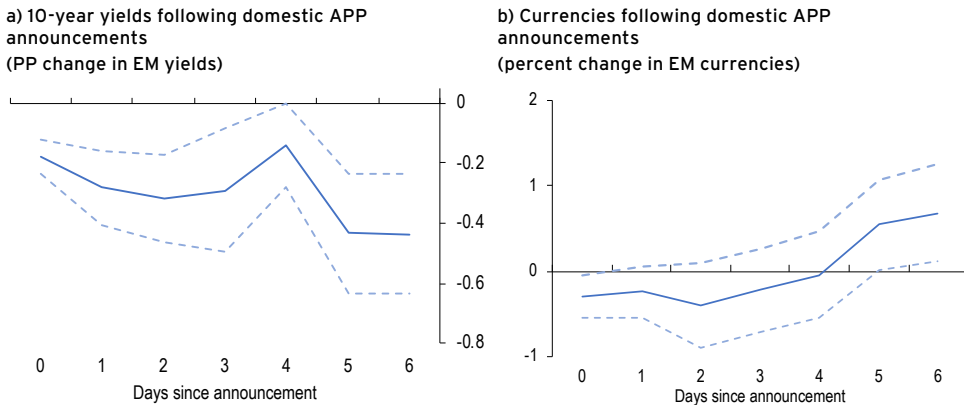
FIGURE 4 MARKET REACTION TO DOMESTIC ASSET PURCHASE PROGRAM ANNOUNCEMENTS



Notes: Days on x-axis. The black line denotes the median across our sample, and the blue range highlights the interquartile range across the events. The sample comprises 10 EMs. ACM = Adrian, Crump, and Moench (2013); APP = asset purchase program; EM = emerging market.

Sources: Bank for International Settlements; Bloomberg Finance L.P.; BNP Paribas; national authorities; IMF staff calculations; Sever et al. (2020).

FIGURE 5 ASSET PURCHASE PROGRAM ANNOUNCEMENTS AND SOVEREIGN BOND YIELDS AND CURRENCIES



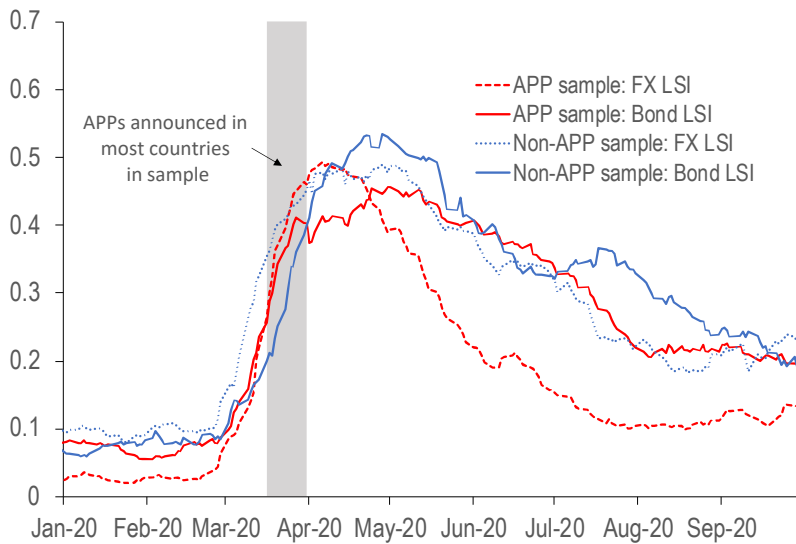
Notes: X-axis is trading days in the aftermath of domestic APP announcements. Day 0 is the day of announcement. Dashed lines are one standard error confidence interval. APP= asset purchase program; EM=emerging market; pp= percentage points.

Source: IMF staff calculations; Sever et al. (2020).

Next, we explore whether the announcements in the second half of March had an effect on local market stress, measured by the LSI. We observe that these announcements did not have an immediate impact on LSIs (Figure 6), given that global financial conditions were very tight and market conditions were hampered by illiquidity, strong risk aversion, and fiscal concerns. However, as external conditions started to improve in April and countries started to implement asset purchase programmes, country-level local stress indices showed some improvement and differentiation.

FIGURE 6 BOND STRESS AND ASSET PURCHASE PROGRAMS IN EMERGING MARKET ECONOMIES

(LSIs in APP vs non-APP economies)



Notes: APP = asset purchase programme; EM = emerging market; FX = foreign exchange; LSI = local stress index.
Sources: Bloomberg Finance L.P.; Haver Analytics; JPMorgan Chase and Co.; national authorities; and IMF calculations.

GOING FORWARD: POTENTIAL TRADE-OFFS WITH ASSET PURCHASE PROGRAMMES

As our empirical analyses show, the experience with emerging market asset purchase programmes has been positive so far. Going forward, beyond the Covid-19 shock, this positive experience may incentivise more EM central banks to consider such unconventional monetary policy tools to widen their policy toolkit, especially in cases where conventional policy space is limited.

Nevertheless, policymakers should pay attention to significant risks – with potentially large costs – of asset purchase programmes. These risks should be weighed before EM central banks welcome a shift in their policy toolkit. In the case of the Covid-19 pandemic, further expansion of duration or size can generate risks and thus require an ongoing evaluation. If large-scale asset purchase programmes are used beyond the current pandemic-related extraordinary situation, the following risks could arise, particularly for open-ended programmes (as discussed in IMF 2020b):

1. **Institutional and central bank credibility can be weakened.** Credible monetary policy frameworks and sound governance are prerequisites for unconventional policy actions such as asset purchase programmes to be effective. Early evidence points out to that the programmes tended to have a greater reduction in local market stress when institutions are stronger.
2. **Asset purchases can lead to fiscal dominance concerns.** When central banks of economies with weak fiscal and monetary policy frameworks become buyers of last resort with large-scale and open-ended asset purchase programmes, it can result in fiscal dominance, and in turn higher risk premiums and steeper government bond yield curves.
3. **Asset purchase programmes can escalate capital outflow pressures, particularly in countries with weak fundamentals.** Expectations of large-scale programmes may yield downward pressures on long-term bond yields and FX rates, putting capital flows at risk, in risk-off periods when emerging market assets are perceived as risky. In those cases, investors can decide to rebalance their portfolios more decisively if the asset purchase programmes generate an excessive gap between domestic and peer-group term premiums across the yield curve.
4. **A long-lasting presence of central banks as buyers in the local currency bond market is likely to distort market dynamics.** Asset purchase programmes can give rise to an increased role of EM central banks as market makers, impairing (i) the price discovery process, especially in primary markets; and (ii) financial market development. The effect of the programmes on collateral availability in the banking system and the impact on policy rate transmission (Singh and Goel 2019), as well as possible overvaluation of assets, should also be considered.

CONCLUDING REMARKS

The unprecedented Covid-19 shock has led many EM central banks to adopt, for the first time, unconventional policies in the form of asset purchase programmes. This new policy tool, particularly if it becomes a part of the toolkit available to EM central banks, could have important implications for financial markets. In this chapter, we explore the implications of announcements by EM central banks of Covid-related asset purchase programmes for bond yields and currencies. The empirical evidence so far shows that these policies helped countries lower bond yields and did not lead to a depreciation of domestic currencies. On top of domestic asset purchase programmes announcements, global factors – such as the QE announcement by the Federal Reserve and an increase in the global risk appetite – had a significant impact on EM assets under consideration.

These findings suggest that, so far, the announcements have not led noticeable investor concerns about fiscal dominance and may have had a role to play in monetary policy. Fiscal dominance concerns would have likely led to higher yields, weaker currencies as

well as rise in inflation expectation measures; there is no evidence of that. This was likely due to the (relatively) small scale of these programmes and the explicit aims of restoring market functioning. Moreover, even in cases where the objectives of asset purchase programmes were related to deficit financing, markets appear to have been reassured by the limited and time-bound implementation of these measures under the extraordinary conditions during the pandemic.

Asset purchases can be a part of the monetary policy toolkit for many EM central banks, especially when they are constrained by effective lower bounds, they have steady inflation expectations, concerns over capital outflows and FX depreciation are low, or where the domestic absorption capacity of new bond supply is limited. As discussed in this chapter, however, policymakers should consider both the benefits and potential risks of such programmes, especially of large-scale and open-ended programmes beyond the ongoing Covid-19 pandemic.

Given the limited experience on the effectiveness of asset purchase programmes in EMs, it is worth noting that these findings should be viewed as preliminary. Additional work is needed as more and richer data become available. The effectiveness of such programmes with respect to decreasing domestic bond yields or increasing other asset prices, diffusing stress in bond markets, and promoting stability requires further investigation, beyond the Covid-19 shock. Importantly, it is important to analyse the impact of actual implementation of asset purchase programmes versus the announcements that have been considered in our analysis. Specific types of asset purchase programmes are also important to account for, such as time-bound programmes versus open-ended programmes, or asset purchases in secondary markets versus in primary markets. Finally, the trade-offs between the positive effects of asset purchase programmes as discussed in this chapter and the related risks offer an interesting avenue for future research to inform policymakers.

REFERENCES

- Adrian, T, R K Crump, and E Moench (2013), "Pricing the Term Structure with Linear Regressions." Federal Reserve Bank of New York Staff Report 340 (revised April 2013).
- Albagli, E, L Ceballos, S Claro, and D Romero (2019), "Channels of US monetary policy spillovers to international bond markets", *Journal of Financial Economics* 134(2): 447-473.
- Bruno, V, and H S Shin (2015), "Cross-Border Banking and Global Liquidity", *The Review of Economic Studies* 82(2): 535-564.
- Di Giovanni, J, S Kalemli-Ozcan, M Fatih Ulu, and Y Soner Baskaya (2017), "International Spillovers and Local Credit Cycles", NBER Working Paper No. 23149.
- Georgieva, K (2020), "[A Global Crisis Like No Other Needs a Global Response Like No Other](#)", IMF Blog, April.

Gopinath, G (2020), “Reopening from the Great Lockdown: Uneven and Uncertain Recovery”, IMF Blog, June.

Gopinath, G (2021), “A Race between Vaccines and the Virus as Recoveries Diverge”, IMF Blog, January.

IMF – International Monetary Fund (2020a), *Emerging and Frontier Markets: Managing Volatile Portfolio Flows*, Global Financial Stability Report, April.

IMF (2020b), *Emerging and Frontier Markets: A Greater Set of Policy Options to Restore Stability*, Global Financial Stability Report, October.

IMF (2021a), “Vaccines Inoculate Markets, but Policy Support Is Still Needed”, Global Financial Stability Report Update, January.

IMF (2021b), “Policy Support and Vaccines Expected to Lift Activity,” World Economic Outlook Update, January.

Jordà, Ò (2005), “Estimation and Inference of Impulse Responses by Local Projections”, *American Economic Review* 95(1): 161–82.

Schrumpf, A, and V Sushko (2019), “FX Trade Execution: Complex and Highly Fragmented”, *BIS Quarterly Review*, December.

Sever, C, D Drakopoulos, R Goel and E Papageorgiou (2020), “Effects of Emerging Market Asset Purchase Program Announcements on Financial Markets During the COVID-19 Pandemic”, IMF Working Paper No. 2020/292.

Singh, M, and R Goel (2019), “Pledged Collateral Market’s Role in Transmission to Short-Term Market Rates”, IMF Working Paper No. 19/106.

Teulings, C N and N Zubanov (2014), “Is Economic Recovery a Myth? Robust Estimation of Impulse Responses”, *Journal of Applied Econometrics* 29(3): 497–514.

ABOUT THE AUTHORS

Dimitris Drakopoulos is a Financial Sector Expert in the IMF’s Monetary and Capital Markets Department. He contributes to sections of the *Global Financial Stability Report* and is a member of the Fund’s market surveillance team. His work focuses on financial stability issues in emerging markets and he has also worked as a financial sector economist for Mexico. Before joining the IMF, Dimitris worked in the fixed income research department of Nomura where he served in various roles including Head of EM Research in London, senior euro area economist and strategist for the interest rates trading desk. He started his career at the interest rates derivative desk at Lehman Brothers. He holds a Master’s degree in Economics from University of London and a Bachelor’s degree in Economics and Social Policy from London School of Economics.

Rohit Goel is a Financial Sector Expert in the IMF's Monetary and Capital Markets Department. He contributes to sections of the *Global Financial Stability Report* and is a member of the Fund's market surveillance team. He specializes in and has published on financial stability risks in emerging and frontier economies including portfolio flows, market liquidity trends and quantitative modelling across asset classes. His past work has also focused on global bank analysis, AE non-financial corporates and monetary policy transmission. Apart from multilateral surveillance, Rohit has also contributed to bilateral surveillance projects in the euro area, China and South Africa. Prior to joining the IMF, Rohit worked as a ranked lead writing analyst at Barclays Asia Research. Rohit holds a B.Tech. in Computer Science from Indian Institute of Technology, Delhi, and an MBA in Finance from Indian Institute of Management, Bangalore. He is also a certified Chartered Financial Analyst, and has completed CAIA and FRM certifications.

Evan Papageorgiou is a Deputy Division Chief in the IMF's Monetary and Capital Markets department. He covers emerging markets and sustainable finance, and he is an author of the *Global Financial Stability Report*. Evan was previously in the European department of the IMF as the senior desk for Sweden and Denmark, covering the financial, fiscal, external and real sectors. Before joining the Fund, Evan was a strategist for Latin American local rates and FX at Goldman Sachs in New York, and a strategist for CEEMEA local markets at Citi in New York and London. He holds a Ph.D. in Operations Research and Financial Engineering from Princeton University, and an M.A. in Financial Mathematics from Columbia University.

Dmitri Petrov is a Financial Sector Expert in the IMF's Monetary and Capital Markets Department. He focuses on European money and capital markets surveillance and contributes to sections of the *Global Financial Stability Report*. Dmitri joined the IMF from Nomura International, where he worked as a structured rates trader, originating CEEMEA exotic derivatives as well running firms EM hybrid and principal risk exposure. Prior to trading he worked as CEEMEA FX and Rates strategist in Nomura International and Commerzbank in London. He holds a MSc in Quantitative Finance from Cass Business School, City University of London.

Patrick Schneider works in the IMF's Global Markets Analysis Division, monitoring global financial markets and contributing to the IMF's *Global Financial Stability Report*. Prior to the IMF, he worked in macroeconomic forecasting at IHS Markit. His research is focused on emerging market capital flows, market structure, and policy responses to crisis periods. He holds an MA in Economics from George Washington University and is a CFA charterholder.

Can Sever is an Economist at the IMF's African Department. He previously worked as an Economist at the IMF's Monetary and Capital Markets Department. He contributed to various policy-related publications such as the IMF's *Global Financial Stability Report* (GFSR), with a specific focus on emerging markets, the IMF's *Asia-Pacific Regional Economic Outlook* (REO) and the World Bank's *Global Financial Development Report*

(GFDR). His research covers various topics in the areas of International Finance and Macroeconomics, and Political Economy. He holds a PhD in Economics at the University of Maryland, College Park.

CHAPTER 22

Central banking and credit provision in emerging market economies during the Covid-19 crisis

371

Luis Felipe Céspedes and José De Gregorio¹

Universidad de Chile

INTRODUCTION

By the early 2000s, many emerging market economies (EMEs) had already adopted central bank independence, followed inflation target regimes, and implemented more flexible exchange rate regimes. They had also accumulated significant international reserves, mainly to serve as a buffer for international liquidity needs. These developments, as well as strong financial regulation and better fiscal accounts, the products of previous financial crises, allowed EMEs to navigate the 2008–2009 Global Financial Crisis (GFC) by applying strong monetary expansions that prevented the collapse of their domestic economies. The GFC was the first instance in which a significant group of EMEs implemented aggressive countercyclical macroeconomic policies, both monetary and fiscal, to reduce the impact of global financial turmoil on their respective economies.² Moreover, despite the deepness of the financial crisis in advanced economies, the financial systems in EMEs were resilient.

The set of tools implemented by many central banks in EMEs during the GFC were unprecedented. In the weeks after the collapse of Lehmann Brothers, the main goal was to secure the proper functioning of domestic financial markets through the provision of liquidity. Thereafter, macroeconomic policy was aimed at supporting aggregate demand in order to contain the effects of the deterioration in terms of trade and external demand and support the recovery. Despite strong monetary actions, only a few EMEs reached the zero lower bound (ZLB) on the monetary policy interest rate. Nonetheless, several EMEs implemented a set of unconventional monetary policies that were designed to provide liquidity and increase the monetary policy stimulus.

¹ We are very grateful to Maurice Obstfeld for comments and to Alberto Undurraga for his very valuable assistance.

² See Vegh and Vuletin (2012) for the case of monetary policy. Alvarez and De Gregorio (2013) discuss the changes in macroeconomic policies between the Asian crisis and the GFC, specifically the expansionary role of monetary policy.

Given the experience of EMEs during the previous crisis, the monetary policy response to the Covid-19 crisis has been aggressive, in terms of both conventional and unconventional monetary policy.³ Nonetheless, the mix of unconventional policies has been different across EMEs in the Covid-19 crisis.

Beginning in early 2020, the Covid-19 crisis produced a massive economic collapse around the world. Lockdowns and other social distancing measures halted activity in many sectors and, as a consequence, many firms and households saw their incomes severely reduced. Initially, a central objective of monetary policy was to alleviate financial conditions to allow credit to flow to firms in distress rather than stimulating aggregate demand. Without credit, many businesses would not have been able to meet their financial commitments, resulting in considerable business closures as well as significant and permanent job losses. Conventional monetary policy had less traction during the early stages of the Covid-19 crisis for two main reasons: interest rates were lower before the onset of this crisis than they were before the GFC, and most firms were constrained by the available quantity of loans rather than loan price (Céspedes et al. 2020). In this context, nonconventional measures implemented by central banks to foster credit and the support of governments, through direct lending to firms or the provision of credit guarantees, were called into action to prevent permanent damage to productive capacity.

When considering the Covid-19 crisis and the GFC from an EME perspective, there is a common element with respect to their origins: both crises have been exogenous shocks. And, crucially, in both cases, the role of financial markets has emerged as a key element of the policy response. As previously noted, the initial monetary policy response to the GFC in EMEs was oriented towards mitigating financial market disruptions associated with the significant increase in domestic rates and spreads, due to the tightening in global financial conditions and an increase in uncertainty. Later, monetary policy was oriented towards providing additional monetary policy stimulus.

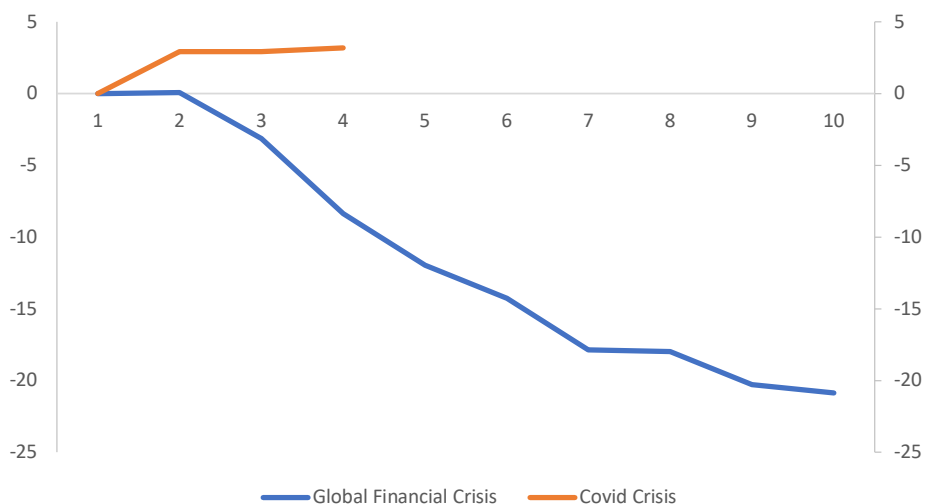
During the Covid-19 crisis, the monetary policy response has been aimed at facilitating refinancing and the provision of new credit to firms in the real sector. The response has therefore been more intensively oriented towards credit policy rather than liquidity injections and forward guidance on the balance sheet, which was the focus of the response to the GFC. Notably, the nature of the fiscal policy and prudential regulation has also differed.

The sample of EMEs we use in our analysis is based on the classification from the Fiscal Monitor, prepared by the International Monetary Fund, and is presented in the Appendix. One salient feature of this sample is that, during the Covid-19 crisis, credit to nonfinancial companies has exhibited countercyclical behaviour, which was not the case during the GFC. Figure 1 shows the evolution of credit to nonfinancial corporations for a group

3 See Borio and Zabai (2016) and Gertler and Kiyotaki (2011) for a taxonomy of monetary policy measures.

of EMEs during the Covid-19 crisis and the GFC, respectively. The evolution of credit corresponds to the percentage difference between real effective loans to nonfinancial corporations, deflated by CPI, with respect to the previous trajectory. ⁴

FIGURE 1 CREDIT IN EMERGING MARKET ECONOMIES



Note: Quarterly data, normalized at 100 in Dec. 2008 and Sept. 2019 for the GFC and the Covid-19 crisis, respectively.
Source: Data constructed from national central banks.

The countercyclical behaviour of credit during the Covid-19 crisis has been crucial to avoiding larger permanent losses in productive capacity in EMEs. Some central banks in EMEs have indicated that the trajectory of credit to nonfinancial firms has been the result of the unconventional policies implemented. From the perspective of future monetary policy, it is important to understand how the context – that is, the mix of conventional and unconventional monetary policy and the interaction of this policy with fiscal and regulatory policy – may have generated this outcome.

The purpose of this chapter is to review policies implemented by central banks in EMEs during the Covid-19 crisis. We frame our investigation by using a comparison with the reaction of central banks in EMEs to the GFC. We find that conventional monetary policy has been somewhat less strong in the Covid-19 crisis; nonetheless, we also observe massive nonconventional monetary and fiscal policies to ensure the flow of credit to the corporate sector – a critical difference compared to the GFC. It is premature to assume, however, that these types of policies can generate similar effects in different contexts. Moreover, the success of these policies generates significant challenges for the future conduct of monetary policy and its interaction with fiscal policy. In the next section, we characterise

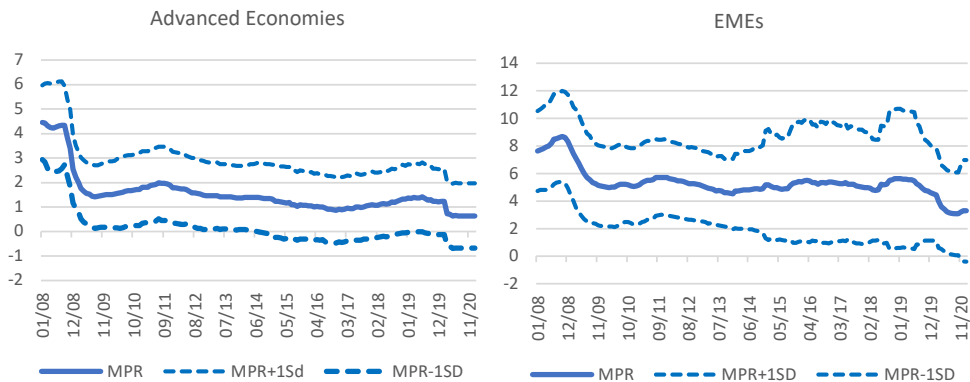
⁴ The previous trajectory is computed using the rate of growth that loans exhibited, on average, in the three quarters preceding the crisis. Period one corresponds to the quarter where the initial policy actions were implemented.

the conventional monetary policy response during the Covid-19 crisis and how it differs from the response to the GFC. Then, we document the unconventional policy response and the fiscal policies used to support credit. And, finally, we provide some conclusions.

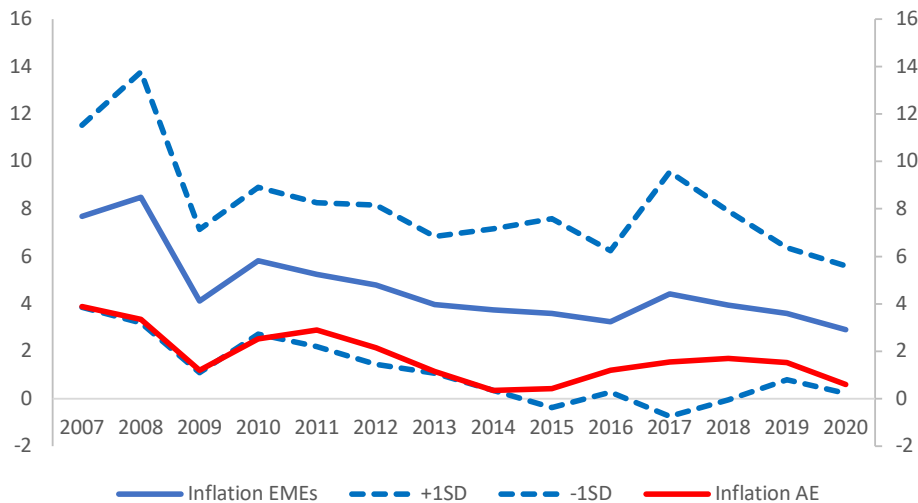
CONVENTIONAL MONETARY POLICY

Central banks in EMEs implemented significant reductions in their monetary policy rates between March 2020 and July 2020. When compared to monetary policy rate reductions during the GFC, the reductions due to the Covid-19 crisis were faster but not larger (see Figure 2). Indeed, during the GFC, it took months for central banks to implement interest rate cuts. Although the peak of the crisis came in September 2008 with the collapse of Lehman Brothers, rate cuts only began at the end of that year and early 2009. This may be explained by the differing cyclical conditions faced by EMEs just before the two respective crises. Inflation rates were significantly higher in September 2008 (see Figure 3); on average in 2008, inflation stood at 8.5%, due to a large extent to high commodity prices, which initially led central banks in EMEs to concentrate on securing liquidity provision before starting a rate cut cycle. Before the Covid-19 crisis, inflation rates were close to their target values; in 2019, the average inflation rate for EMEs was 2.9%. This precipitated an almost immediate cut in rates by EME central banks, beginning between March and April 2020.

FIGURE 2 MONETARY POLICY RATES



Source: Bloomberg.

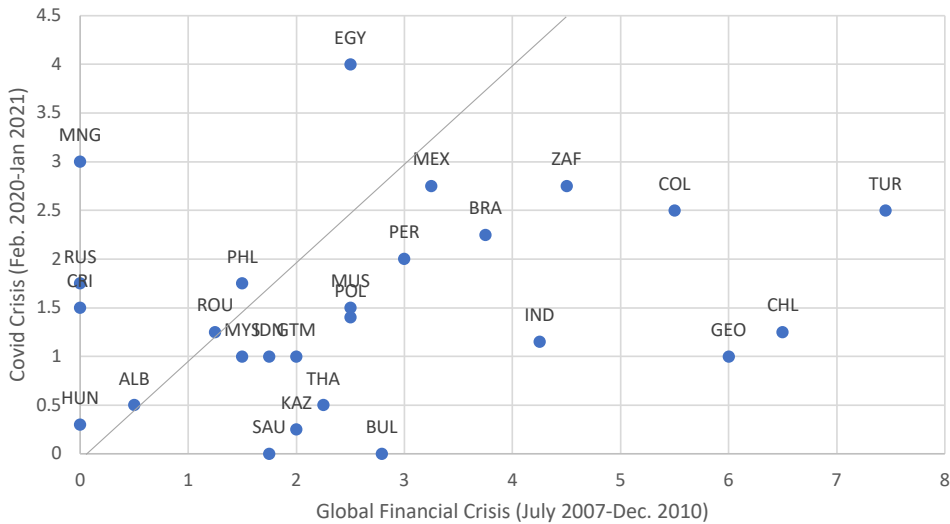
FIGURE 3 INFLATION (12-MONTH END OF YEAR, %)

Source: IMF, WEO database.

Nonetheless, because monetary policy rates were already low before the Covid-19 crisis, the magnitude of the cuts has been lower than during the GFC. As Figure 2 shows, in advanced economies the sharp reduction in rates has not been repeated, mainly because rates were already close to the ZLB when the Covid-19 crisis began. In EMEs, monetary policy rates are still, on average, away from the ZLB; however, the rate reduction has been less than what was implemented during the GFC. Indeed, rates fell from an average of 8.6% at their peak in November 2008 to 5% at their lower level in February 2010. In contrast, from a maximum of 5.6% in January 2019, rates fell to a minimum of 3.1% in August 2020. As can be seen in Figure 2, interest rates started falling before the Covid-19 crisis erupted. In February 2020, the average monetary policy rate for EMEs was 4.5%, so the Covid-19 crisis rate cut was only 140 basis points compared to 360 basis points in a period of the same length during the GFC. Figure 4 shows there is heterogeneity across countries; however, most countries made larger cuts during the GFC.⁵

Since the GFC, monetary policy frameworks in many EMEs have evidently become more robust. The implementation of monetary policy is more effective if the policy actions are well understood by the public, as these actions operate through the expectations of public agents. It is also true that the Covid-19 crisis generated a global cut in interest rates which mitigated the pressure on exchange rate depreciation in EMEs – depreciation that on other occasions has been blamed as a limiting factor for the countercyclicality of monetary policy due to currency mismatches and high pass-through from depreciation to inflation.

5 The GFC represents a longer period than that of the Covid-19 crisis. However, making the period the same length does not change the conclusions because most of the cuts took place during the first half of 2009.

FIGURE 4 CHANGE IN MONETARY POLICY RATES IN EMEs (%)

Source: Bloomberg.

UNCONVENTIONAL MONETARY POLICY

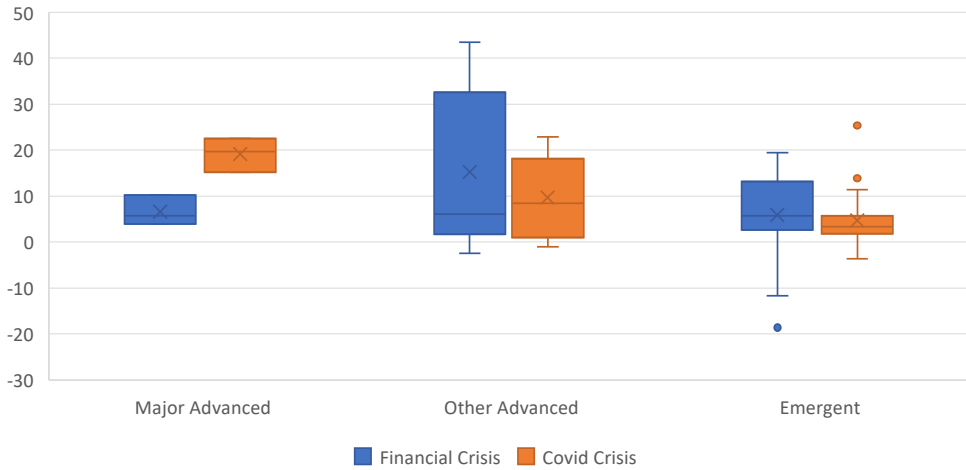
During the GFC, many countries implemented unconventional monetary policies. In EMEs, unconventional monetary policies were initially oriented towards providing international and domestic liquidity to financial markets and later to increase the monetary policy stimulus. In all cases, except for Chile and Saudi Arabia, monetary policy rates did not reach the ZLB. We have seen this course of action repeated in the Covid-19 crisis, with unconventional monetary policies aggressively implemented from the beginning with the objective of generating a flow of credit to firms in distress.

Unconventional policies have a clear connection to the size of central bank balance sheets. In order to analyse the extent of the monetary policy stimulus, commonly known as quantitative easing, across countries, we compute the changes in central bank assets as share of GDP, normalized by 2008 for the GFC and 2019 for the Covid-19 crisis.

The evidence is shown in Figure 5. Only in major advanced economies (the euro area, Japan and the US) was the expansion of central bank balances higher during the Covid-19 crisis. These economies increased central bank assets by between 15% and 23% of GDP. In other advanced economies, the expansions in central bank balance sheets during the Covid-19 crisis were, in most of them, less intense than during the GFC. In EMEs, the increase in central bank assets was similar in both crises, although during the Covid-19 crisis there was less heterogeneity and most countries increased their assets. In the cases of Chile and Mauritius the expansion was sizable, representing 25% and 14% of GDP,

respectively. One main difference between the GFC and the Covid-19 crisis with respect to balance sheet expansion is the types of unconventional policies implemented. In what follows we will review these different types of unconventional policies.

FIGURE 5 CENTRAL BANK ASSETS (PERCENTAGE CHANGE, AS SHARE OF GDP)



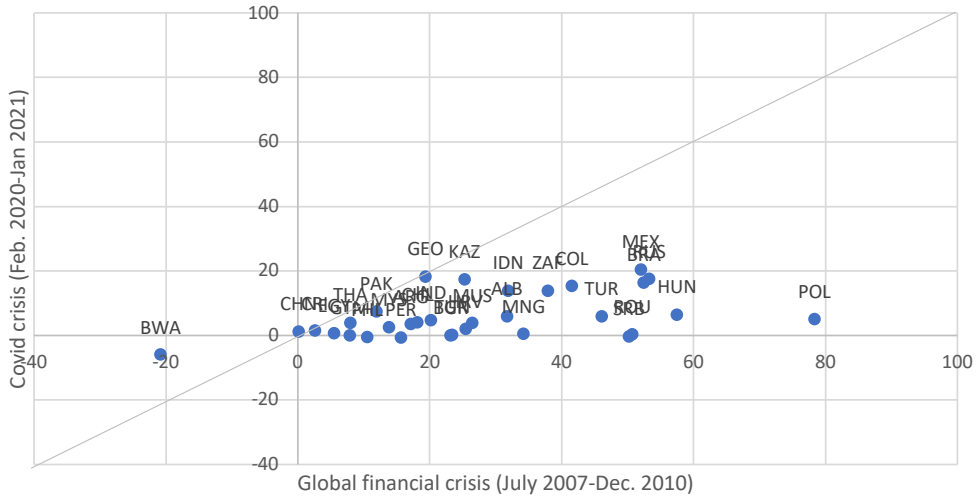
Note: The GDP for 2008 and 2019 are used to scale central bank assets in the GFC and the Covid-19 crisis, respectively. For the GFC, the period is July 2008 to December 2010. For the Covid-19 crisis, the period is February 2020 to January 2021. Source: Bloomberg.

Foreign exchange market interventions

The GFC and the Covid-19 crisis had different origins, and they have produced different outcomes. During the GFC there were significant exchange rate depreciations in EMEs, and they were lasting. In the Covid-19 crisis, the depreciations have been much smaller and shorter in duration, as shown in Figure 6.

The GFC triggered a flight to safety, which caused a sharp depreciation in the currencies of EMEs, a tightening of external financial conditions, and a significant spike in risk premia (see Figures 6 and 7). The Covid-19 crisis, however, is global and did not involve initial global financial market dislocations. For these reasons, depreciations have been milder and the widening of spreads more limited.

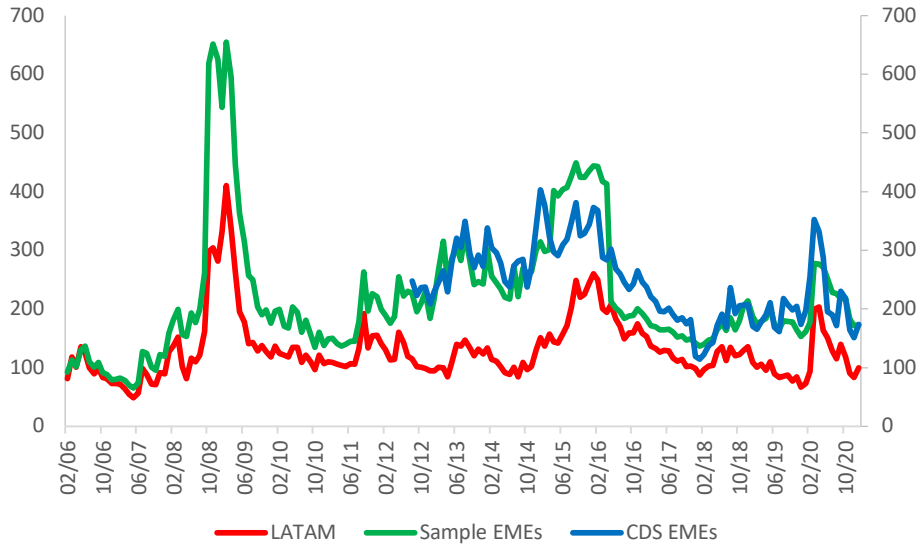
FIGURE 6 EXCHANGE RATES IN EMES PERCENTAGE CHANGE)



Note: This figure considers the period of maximum depreciation across EMEs during both crises. For the GFC the period is July 2008 to February 2009, and for the Covid-19 crisis the period is February 2020 to March 2020.

Source: Bloomberg.

FIGURE 7 CDS EMERGING MARKET ECONOMIES (BASIS POINTS)

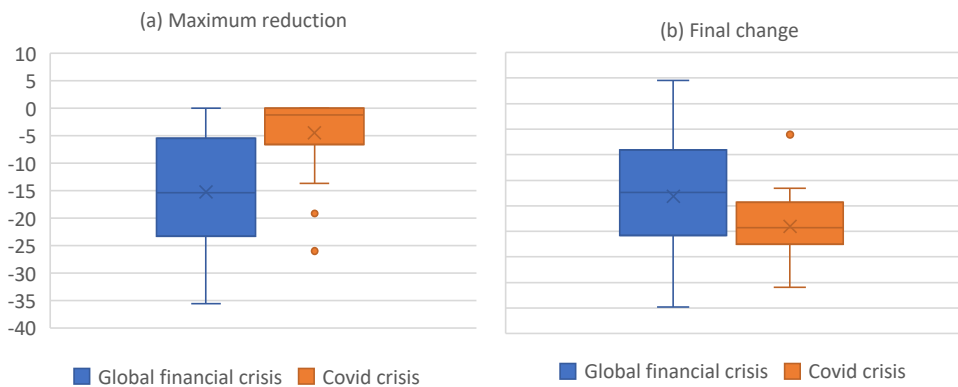


Note: The CDS EMES correspond to the Markit CDX 5y, and LATAM as well as Sample EMES are the countries of Latin America and emerging market economies, respectively, from our sample shown in the appendix.

Source: Bloomberg.

In both crises, EME central banks intervened early on to stem the currency pressures by injecting international liquidity into financial markets. In Figure 8a, we show the maximum decline in reserves for the period between the beginning of each crisis (July 2008 for the GFC and February 2020 for the Covid-19 crisis) and the date the reserves reached their minimum. In our sample of EMEs, the decline during the GFC was about 15%, whereas for the Covid-19 crisis it was about 5%. Towards the end of our sample periods (December 2010 for the GFC and January 2021 for the Covid-19 crisis), central banks had accumulated reserves above the initial levels, as shown in Figure 8b. Uncertainty regarding the evolution of the pandemic and future global financial conditions may explain this accumulation of international reserves.⁶

FIGURE 8 CENTRAL BANK RESERVES (PERCENTAGE CHANGE, AS SHARE OF GDP)



Source: IMF.

One has to be cautious when interpreting the evolution of reserves because they may also respond to valuation changes. This is discussed in Dominguez et al. (20120), where the authors show that, despite valuation changes, there was active reserve management during the GFC. Valuation changes may have also been important during the Covid-19 crisis, as the US dollar in its broad measure had weakened by about 10% between March 2020 and early 2021.

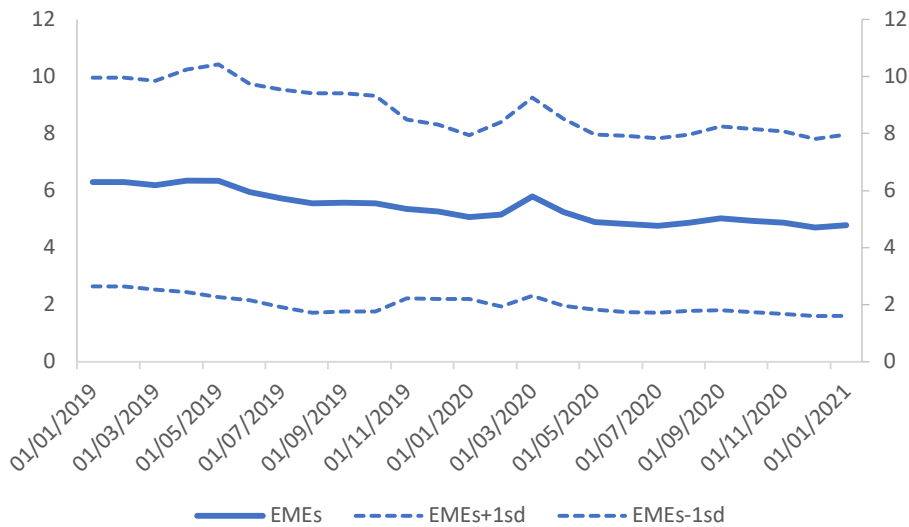
In summary, in both crises the financial systems in EMEs were able to cope with the weakening of the currencies and, in particular, with the increase in risk premia. Having said that, the policy of injecting international liquidity into financial markets was more predominant during the GFC, as the increase in risk premia was significantly higher than it has been during the Covid-19 crisis.

⁶ Céspedes and Chang (2020) develop a model in which it is optimal for the central bank to accumulate international reserves when facing an increase in uncertainty regarding future global financial conditions. The accumulation of reserves allows the central bank to provide international liquidity to domestic markets in case a crisis occurs.

Domestic liquidity injections

The initial Covid-19 shock put pressure on domestic bond markets. Global risk aversion generated the withdrawal of investment from some EMEs that increased local currency bond yields (see Figure 9). Central banks in EMEs responded by providing additional liquidity lines, extending existing facilities or generating new ones, and by expanding eligible collateral for repo operations. From government bonds and bank debt, several central banks also allowed corporate debt as collateral. In some cases, central banks in EMEs implemented local currency bond purchase programmes. And in most of those cases, the central banks intervened by purchasing local currency sovereign bonds in secondary markets. In other cases, they intervened in mortgage and bank bond markets. The situation was so severe that changes in the legal framework were even implemented to deal with the Covid-19 crisis. In the case of Chile, the country's central bank was legally not allowed to buy government bonds in secondary markets, and a constitutional amendment was passed to allow the Central Bank of Chile to do so.

FIGURE 9 SOVEREIGN BOND YIELDS IN EMEs (PERCENT)



Source: Bloomberg.

It is important to distinguish these (traditional) liquidity injections from the types of liquidity facilities discussed in Gertler and Kiyotaki (2011), which were intensively implemented in advanced economies during the GFC in the context of credit policy. As we discuss later in this chapter, central banks in EMEs also implemented liquidity facilities of this type during the Covid-19 crisis, but not during the GFC. The intention

of the traditional liquidity injections discussed in this section was to address market dislocation arising from investor risk aversion. And, as can be seen in Figure 9, they were effective in reducing bond yields.⁷

Credit policies

Although central banks in developed economies had ample experience with credit policies during the GFC, previous to the Covid-19 crisis central banks in EMEs had limited their use of unconventional policy tools to liquidity injections of the type discussed above – that is, to the provision of liquidity not directly connected to the provision of credit by financial intermediaries to businesses. However, the Covid-19 scenario has seen a change in their approach and many EME central banks have implemented credit policies aimed at supporting the flow of funding to businesses.

Central banks in EMEs offered term funding facilities for banks, in some cases subject to increasing credit, refinancing programmes, or loan guarantee schemes. Additionally, in some cases corporate asset purchase programmes were established. The magnitude of these operations has been significant. In Chile, the special credit line available to domestic banks, conditional on the provision of new loans by private banks to firms, can reach up to 14% of GDP.

As shown in Figure 1, the expansion of credit to nonfinancial corporations has been quite remarkable during the Covid-19 crisis as compared to the GFC, particularly in a context of a significant decrease in economic activity. In the second quarter of 2020, quarterly GDP in EMEs fell almost 13% in annual terms. Compare this to the GFC scenario where, when considering only the worst quarter in terms of year-on-year GDP growth for our sample of EMEs, for the period between the fourth quarter of 2008 and the fourth quarter of 2009, quarterly GDP only fell by 4%.

It would be reasonable to think that the credit policies implemented by EME central banks play a crucial role in explaining the dynamics of credit to firms. But it is also important to take into account that these actions were complemented by, or were a complement to, other policies implemented by governments (such as direct lending to firms and loan guarantee schemes) and by regulatory authorities (such as changes to prudential regulation oriented towards increasing the capacity of banks to lend). In the next section, we discuss the fiscal policy side of the Covid-19 macroeconomic interventions to support credit.

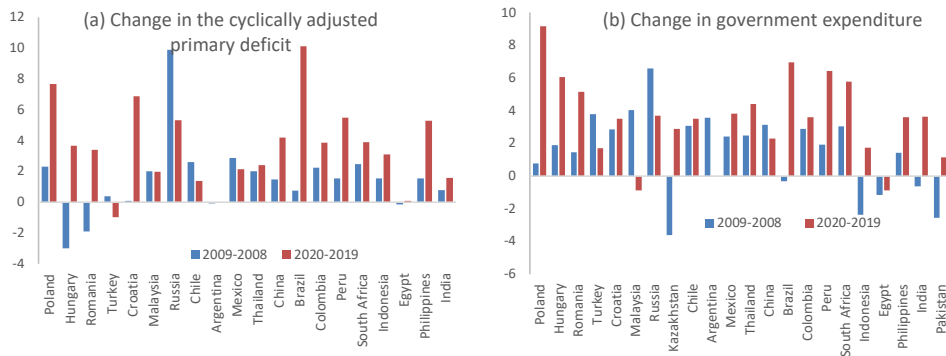
7 See Arslan et al. (2020) for details.

FISCAL SUPPORT FOR THE EXPANSION OF CREDIT AND REGULATORY CHANGES

In order to contain the effects of the Covid-19 crisis, fiscal authorities have used a wide range of instruments including credit guarantees, public loans, tax deferrals, and subsidies to payroll. Out of the 34 EMEs in our sample, at least 24 implemented credit guarantees, particularly for small- and medium-sized enterprises. Fiscal authorities also used direct credit from public institutions and banks.⁸

Indeed, as we illustrate in Figure 10 using two indicators, on average, fiscal policy during the Covid-19 crisis was more aggressive in terms of fiscal expansions than it was during the GFC. The increase in the cyclically adjusted primary balance is displayed in panel (a); the increase in government expenditure as share of GDP is shown in panel (b). In both cases, we compare the periods 2008–2009 and 2019–2020. On average, the cyclically adjusted deficit increased by 1.5% of GDP during the GFC, whereas this increase was 3.8% of GDP during the Covid-19 crisis. Similarly, government expenditure increased by 1.6% and 3.7% of GDP during the GFC and the Covid-19 crises, respectively. Other indicators also show the greater expansiveness of fiscal policy during the Covid-19 crisis: net debt increased by 9.9% of GDP as compared to 4% of GDP during the GFC.⁹

FIGURE 10 FISCAL POLICY (PERCENT OF GDP)



Source: IMF Fiscal Monitor.

Another crucial policy dimension aimed at stimulating the flow of credit to firms during the Covid-19 crisis has been the regulatory adjustments made by supervisory agencies or central banks. The reduction of reserve requirements, changing risk weights, broadening the range of institutions to receive liquidity support, and reducing conservation capital

⁸ For details see the IMF review of policy response to Covid-19 crisis (<https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>). In the data that follow, we exclude Saudi Arabia and United Arab Emirates because their extreme reliance on oil represents outliers in terms of fiscal performance.

⁹ All fiscal data are taken from the IMF fiscal monitor database published in October 2020.

were among the principal tools used by regulators. The aim of these tools has not only been to prevent liquidity crunches but also to foster the expansion of credit to nonfinancial corporations.

FUTURE CHALLENGES FOR MONETARY POLICY IMPLEMENTATION

The flow of credit to nonfinancial firms during the initial stages of the Covid-19 crisis has been quite remarkable. It has been a critical element that has prevented further business closures and the destruction of productive capacity. A clear understanding of the differences between the Covid-19 crisis and the GFC in terms of the effectiveness of the policies implemented to sustain credit flows is quite relevant from a policymaking perspective. And, although a more empirical and theoretical analysis must be developed in order to provide more conclusive evidence, the discussion of some elements may give us an indication as to why credit behaved differently during the Covid-19 crisis as compared to the GFC.

The shock created by the Covid-19 pandemic was truly exogenous and global. And the aggressive monetary policy response to the crisis in major advanced economies generated the space for more expansive monetary policy implementation in EMEs. On previous occasions, monetary policy responses in some EMEs have been limited by concerns that sudden exchange rate depreciations may generate significant financial turmoil.

Additionally, as discussed by García (2021), central bank concerns regarding moral hazard issues were limited at the onset of the Covid-19 crisis. The critical question, however, is whether the policy response to this crisis will change the perception of market participants regarding future monetary policy actions in related contexts. We think that this should not be a major concern for now, but that perceptions could change depending on the response of the authorities to a potentially negative scenario in terms of loan performance.

The provision of domestic liquidity related to the Covid-19 crisis has been massive. And, as Calvo (2010) argues, liquidity shocks could trigger a sudden stop in credit provision that may generate significant output losses. Thus, avoiding liquidity crunches may be a necessary condition to avoid credit crunches. Nonetheless, liquidity provision may not be a sufficient condition to avoid sharp contractions in credit flows. Liquidity provision was massive in the GFC, but credit flows were still much lower than during the Covid-19 crisis, as we have indicated in this chapter.

A crucial difference between the Covid-19 crisis and the GFC was the specific context for financial intermediaries. It was certainly to the benefit of private banks to postpone any liquidation of clients. The shock was massive – liquidating clients could have been devastating in terms of capital needs and also in terms of the liquidation of solvent clients affected by a liquidity shock. In addition, regulatory adjustments allowed banks to provide refinancing and additional credit with significantly lower capital requirements.

The set of complementary fiscal policy actions also differed between the two respective crises. Fiscal support to firms during the Covid-19 crisis, in the form of loan guarantees, capital injections, liquidity injections (through a reduction in taxes and a postponement in the payment of taxes), and measures oriented towards supporting wage bills significantly helped to avoid balance sheet deterioration for businesses, an actuality that would have made firms ineligible for credit.

Overall, we think that the coordination and complementarity of policy actions must be praised as crucial components of the policy response. Transparency and the clear definition of objectives were also key elements in this regard. The fact that no significant imbalances were present at the time the Covid-19 shock hit the economy was also quite beneficial for policy actions. And it is clear that a sound monetary policy framework has been a crucial foundation for many EMEs during the Covid-19 crisis.

Yet, it is also important to recognise that all the necessary activism on the macroeconomic policy side has increased the vulnerability of EMEs. One facet of this vulnerability stems from the fact that businesses operating in EMEs will find themselves with higher levels of debt when the Covid-19 crisis comes to an end. Moreover, sudden changes in financial conditions could trigger episodes of financial fragility that may generate disruption in the provision of credit, bringing about an irrecoverable scenario for some companies. In this context, a relatively more rapid recovery of the US economy is a potential risk for some EMEs.

Another facet of EMEs vulnerability is on the fiscal front. At the beginning of the GFC, the fiscal position of EMEs was much stronger than it was in 2019: most commodity exporters, for example, had been taking advantage of a significant commodity price boom. However, increases in government expenditure to mitigate the effects of the GFC were not completely undone after the crisis, generating fiscal inertia and a persistent deterioration in public finances (De Gregorio 2014). Despite this deterioration in fiscal dynamics, EMEs had fiscal space to respond to the Covid crisis. And they used it. Fiscal policy was central to keeping firms afloat and providing the population with compensation for partial income loss. But despite the fact that borrowing rates are about 220 basis points lower today than they were ten years ago, which is good news for servicing debt, the fiscal positions of EMEs have become more vulnerable to increases in interest rates and the curtailment of financing than they were during the exit from the GFC. Issues relating to fiscal sustainability will become relevant if EMEs are not able to withdraw the exceptional fiscal expansions that are in place.

Central banks in many EMEs have been operating in uncharted territories during the Covid-19 crisis in terms of policies to foster credit. The creation of new financing lines to the banking system to support the corporate sector has been broadly used, for example. The expansion of eligible collateral to include corporate bonds has brought some credit risk to EME central bank balance sheets, but it has also broadened liquidity lines. These policies have been implemented under exceptional circumstances, and their goal has been

to foster the provision of credit. With the support of fiscal policy this has been achieved at the aggregate level; however, there has been heterogeneity in the effectiveness of these policies in terms of credit provision given the different impacts that the Covid-19 crisis has had in economic sectors and in firms. Limiting the amplification of the credit cycle, through changes in regulation and by providing special financing lines to the financial system, is a positive lesson that can be taken from the Covid-19 crisis.

In the future, there is a possibility that central banks may come under some pressure to implement these kinds of measures in the context of a more moderate economic slowdown. And their implementation could be conceivable as long as the policies are consistent with reducing the cost of the business cycle. However, taking credit risk onto central bank balance sheets may undermine the independence of monetary policy. Moreover, as the support of credit is mainly a fiscal policy tool, the principal policy to maintain credit should be fiscal. Of course, in the future this policy may be more difficult to implement as public finances will be much weaker after the Covid-19 crisis has come to an end. Regulatory measures may help, if they are used in a countercyclical way and without jeopardising the stability of the financial system. Central banks have to remain focused on price and financial stability while maintaining the necessary flexibility to adapt to new circumstances.

REFERENCES

- Alvarez, R and J De Gregorio (2014), “Understanding Differences in Growth Performance in Latin America and Developing Countries between the Asian and the Global Financial Crises”, *IMF Economic Review* 62(4): 494-525.
- Arslan, Y, M Drehmann and B Hofman (2020), “Central Bank Bond Purchases in Emerging Market Economies”, *BIS Bulletin* No. 20.
- Borio, C, and A Zabai. (2016) “Unconventional Monetary Policies: A Re-appraisal”, BIS Working Papers N°570.
- Calvo, G (2010) “Looking at Financial Crises in the Eye: A Simple Finance/Macro Framework”, mimeo, Columbia University.
- Céspedes, L F and R Chang (2020) “Optimal Foreign Reserves and Central Bank Policy Under Financial Stress”, NBER Working Paper 27923.
- Céspedes, L F, R Chang and A Velasco. (2020) “The Macroeconomics of a Pandemic: A Minimalist Framework”, NBER Working Paper 27228 (revised November 2020).
- De Gregorio, J (2014), *How Latin America Weathered the Global Financial Crisis*, Peterson Institute for International Economics.
- Dominguez, K M E, Y Hashimoto and T Ito (2012), “International Reserves and the Global Financial Crisis”, *Journal of International Economics* 88(2): 388-406.

García, P (2021), “The Monetary and Financial Policy Response to the CV19 Crisis: The Case of Chile”, Documentos de Política Económica N°69, Central Bank of Chile.

Gertler, M and N Kiyotaki. (2011) “Financial Intermediation and Credit Policy in Business Cycle Analysis”, in B M Friedman and M Woodford (eds), *Handbook of Monetary Economics*, Volume 3 A, Elsevier Science, pp. 547-99.

Vegh, C A and G Vuletin (2013), “Overcoming the Fear of Free Falling: Monetary Policy Graduation in Emerging Markets”, in *World Scientific Studies in International Economics: Volume 30. The Role of Central Banks in Financial Stability How Has It Changed?*, World Scientific Publishing Co., pp. 105-129.

ABOUT THE AUTHORS

Luis Felipe Céspedes is Professor of Economics in the Department of Economics at Universidad de Chile. He is a non-resident fellow at the Center for Global Development. He served as Minister of Economy, Development and Tourism of Chile between 2014 and 2017. He was Chief of Economic Research at the Central Bank of Chile between 2009 and 2011 and Chief Economic Advisor at the Ministry of Finance of Chile in 2006-2009.

José De Gregorio is Professor of Economics in the Department of Economics at Universidad de Chile and Dean of the School of Economics and Business of the Universidad de Chile. He is non-resident senior fellow at the Peterson Institute of International Economics. He was governor of the Central Bank of Chile from 2007 until 2011. Before that he was vice-governor from 2003 and member of the bank's board from 2001. During 2000 and 2001, De Gregorio was minister of the combined portfolios of economy, mining, and energy.

APPENDIX

TABLE A1 EMERGING MARKET ECONOMIES IN EACH FIGURE

Country/figure	1	2	3	4	5	6	7	8	9	10a	10b
Albania		✓	✓	✓	✓	✓					
Argentina			✓			✓	✓	✓		✓	✓
Botswana			✓		✓	✓					
Brazil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bulgaria	✓	✓	✓	✓		✓	✓	✓	✓		
Chile	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
China			✓		✓	✓	✓		✓	✓	✓
Colombia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Costa Rica	✓	✓	✓	✓	✓	✓	✓		✓		
Croatia			✓			✓	✓	✓		✓	✓
Egypt	✓	✓	✓	✓		✓	✓			✓	✓
Georgia		✓	✓	✓	✓	✓		✓			
Guatemala		✓	✓	✓	✓	✓	✓	✓			
Hungary	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
India	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Indonesia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kazakhstan		✓	✓	✓	✓	✓	✓	✓			✓
Malaysia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mauritius		✓	✓	✓	✓	✓		✓			
Mexico	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mongolia	✓	✓	✓	✓		✓	✓				
Pakistan			✓		✓	✓	✓		✓		✓
Peru	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Philippines		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poland	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Romania	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Russia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Saudi Arabia	✓	✓	✓	✓			✓				
Serbia			✓		✓	✓	✓				
South Africa		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Thailand	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tunisia			✓			✓	✓				
Turkey		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UAE			✓								

TABLE A2 ADVANCED ECONOMIES IN EACH FIGURE

Country/figure	2	3	5
Australia	✓	✓	✓
Austria		✓	
Belgium		✓	
Canada	✓	✓	
Cyprus		✓	
Czech Republic	✓	✓	
Denmark	✓	✓	✓
Estonia		✓	
Euro Area	✓		✓
Finland		✓	
France		✓	
Germany		✓	
Greece		✓	
Hong Kong SAR		✓	
Iceland		✓	✓
Ireland		✓	
Israel	✓	✓	✓
Italy		✓	
Japan		✓	✓
Korea	✓	✓	✓
Latvia		✓	
Lithuania		✓	
Luxembourg		✓	
Netherlands		✓	
New Zealand	✓	✓	
Norway	✓	✓	✓
Portugal		✓	
Singapore	✓	✓	
Slovak Republic	✓	✓	
Slovenia	✓	✓	✓
Spain		✓	
Sweden	✓	✓	✓
Switzerland	✓	✓	✓
United Kingdom	✓	✓	
United States	✓	✓	✓

CHAPTER 23

A global shock to a global system: Covid-19 and the post-2008 regulatory framework

Dietrich Domanski¹
Financial Stability Board

1 INTRODUCTION

The Covid-19 pandemic represents the first serious test of the global financial system that has developed in the aftermath of the 2008 financial crisis. The sudden stop in economic activity pushed the global economy into the deepest and most broad-based recession since the Great Depression. In March 2020, this shock put considerable strain on the financial system. It caused a fundamental repricing of risk and a heightened demand for safe and liquid assets in both the financial and non-financial sectors, which propagated through the financial system and morphed into a dash for cash as uncertainty over the scale and duration of the pandemic escalated.²

The global financial system weathered the March 2020 turmoil thanks to greater resilience and a swift, determined, and bold international policy response. Banks and financial market infrastructures (FMIs), particularly central counterparties (CCPs), held up well and were largely able to absorb rather than amplify the shock. Nevertheless, key funding markets experienced acute stress, forcing authorities to take decisive action to sustain the supply of financing to the real economy, provide economic assistance, alleviate US dollar funding shortages, and support market functioning. Without these interventions, the stresses in markets would have likely continued and may well have been amplified.

The perspective of the Financial Stability Board (FSB) on policy responses to Covid-19 is about the role of international coordination in preserving financial stability and supporting real economy financing. G20 leaders established the FSB in 2009 to coordinate the regulatory reform work in the aftermath of the 2008 financial crisis and to address financial vulnerabilities in the interest of financial stability. One key question from an FSB perspective is, therefore, whether the regulatory framework agreed by the

¹ The views expressed in this chapter are those of the writer and do not necessarily reflect those of the FSB or its members.

² For a detailed analysis of the March 2020 market turmoil, see FSB (2020a).

G20 has worked as intended during Covid-19. Another question is whether the process of international cooperation and coordination on financial stability issues through the FSB has proved effective.

This chapter discusses these questions. Sections 2 and 3 review the performance of more and less resilient parts of the global financial system during Covid-19, and the role the regulatory reforms have played in this regard. Section 4 considers issues arising for financial stability policy in light of the Covid-19 experience. Section 5 discusses the role of international coordination during the Covid-19 pandemic. Section 6 looks at some of the challenges ahead.

The discussion in this chapter is necessarily preliminary. The global macroeconomic outlook continues to be highly uncertain amidst an evolving pandemic situation. Most Covid-19 support measures remain in place. Easy financing conditions and sustained government support have kept corporate insolvencies in check, but non-financial sector debt levels have kept rising. Risks to financial stability remain elevated, and financial system resilience may well be tested again.

2 THE COVID-19 SHOCK HIT A MORE RESILIENT FINANCIAL SYSTEM

Core parts of the global financial system entered the Covid-19 pandemic in a more resilient state than during the financial crisis of 2008. In particular, major banks at the core of the financial system could largely absorb, rather than amplify, the macroeconomic shock. Notwithstanding a significant tightening of bank funding conditions during the March 2020 market turmoil and a challenging operational environment,³ banks were able to expand their lending to the real economy. During the first half of 2020, bank corporate credit grew above trend in G7 economies (IMF 2020). Moreover, financial market infrastructures functioned well, despite the challenging external financial and operational conditions, amidst unusually high market activity in March. In particular, CCPs remained resilient amidst extremely high asset price volatility and significant increases in initial margin and flows of variation margin. In contrast, in 2008, the freeze in bank funding and dysfunctional over-the-counter (OTC) derivatives markets were at the epicentre of the financial crisis (BIS 2008).

These areas of greater resilience in the global financial system correspond with those where progress in implementing G20 reforms has been greatest.⁴ First and foremost, *progress in building resilient financial institutions* has been significant. The key pillar of greater bank resilience has been Basel III. Regulatory adoption of several core Basel III elements has generally been timely to date. As a consequence, major banks are less leveraged, much better capitalised and more liquid than they were before the 2008

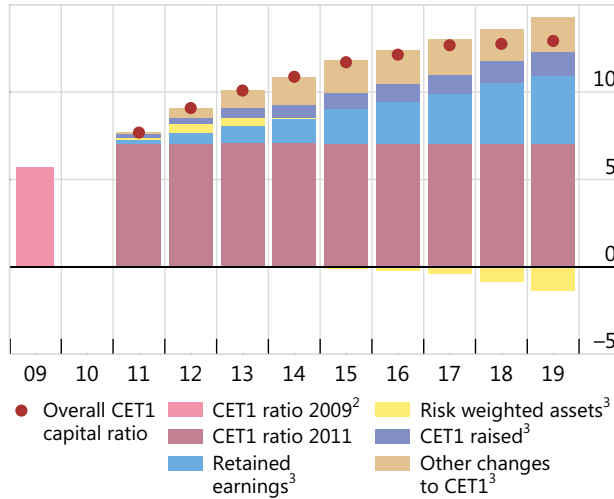
³ The BIS (2020) cites anecdotal evidence that major banks operated with only 10-15% of their staff in the office.

⁴ A comprehensive documentation of progress in implementing agreed G20 reforms is provided in the FSB's Annual Reports on the Implementation and Effects of Financial Reforms (see FSB 2020b for the latest report).

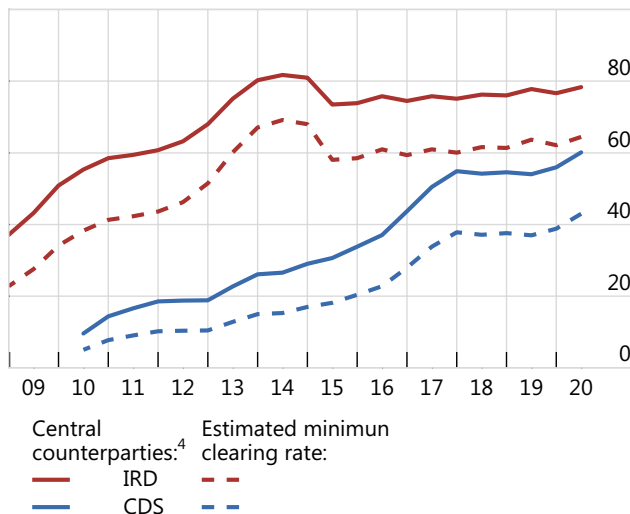
financial crisis. The capital ratios of large internationally active banks have doubled since 2011 (Figure 1, top panel), and the overall amount of additional core Tier 1 capital in the global banking system amounts to an estimated \$2.5 trillion (BCBS 2020a).

FIGURE 1 SOURCES OF FINANCIAL SYSTEM RESILIENCE

a) Basel III CET1 capital ratios and their drivers¹ (for Group 1 banks, %)



b) Growth of central clearing (notional amount outstanding, %)



Notes: 1 The graph shows the fully phased-in initial Basel III framework for the data points up to and including the end of 2018 and the actual framework in place at the reporting date for all data points thereafter. 2 Based on the different sample of the Committee's comprehensive Quantitative Impact Study and therefore not fully comparable. 3 Cumulative contribution since 2011. 4 As a percentage of notional amounts outstanding against all counterparties.

Sources: Basel III Monitoring Report (December 2020); BIS OTC derivatives statistics; FSB Annual Report of the Implementation and effect of reforms, 2019.

Second, there has been significant progress in *addressing the too big to fail problem* (FSB 2021a). Systemically important banks in advanced economies have built up significant loss-absorbing and recapitalisation capacity by issuing instruments that can bear losses in the event of resolution.⁵ While perhaps less apparent, recovery and resolution planning have supported risk management on a cross-border basis through enhanced liquidity monitoring and reporting, as well as better coordination with regulators, who themselves are part of formal cross-border crisis management groups (CMGs). Indeed, the role of CMGs and colleges as mechanisms for sharing timely and granular information has proved critical during the Covid-19 pandemic.

Third, efforts to *make derivatives markets safer* have proven beneficial. The shift to central clearing of standardised OTC derivatives has replaced much of the complex and opaque web of ties between market participants, with simpler and more transparent links between CCPs and their clearing members. This shift has been supported by steps to enhance CCP resilience, recovery planning and resolvability, as well as robust risk management requirements (including margining and collateralisation). The share of centrally cleared transactions has increased significantly, to approximately 80% of interest rate derivatives from approximately 50% in 2010 (Figure 1b). Furthermore, the range of banks and other financial institutions that channel their transactions through CCPs has broadened.

Operational resilience was an important complement to greater financial strength in particular in the initial phase of the pandemic. Precautionary lockdown measures tested the contingency plans of financial institutions and market participants. Remote and split-site working and limited staff availability challenged the execution of complex market operations and centralised functions. Nevertheless, financial institutions and FMIs moved to a remote working environment without major reported incidents despite, in some cases, significantly increased trading volumes (FSB 2020a).

3 A DETERMINED POLICY RESPONSE STABILISED PARTS OF THE FINANCIAL SYSTEM THAT WERE LESS RESILIENT

While core parts of the financial system were able to withstand and absorb the Covid-19 shock, key funding markets experienced acute stress (FSB 2020a). Although some degree of financial stress was to be expected, its breadth and depth was unprecedented. As in previous cases, the shock caused a fundamental repricing of risk and a heightened demand for safe assets. The stress also led to large and persistent imbalances in the demand for, and supply of, liquidity needed to support intermediation. On the demand side, non-financial

5 All G-SIBs are estimated to meet or exceed the 2022 minimum external total loss-absorbing capacity (TLAC) requirement on both risk-weighted assets (RWAs) and leverage ratio exposure measures (FSB 2020c).

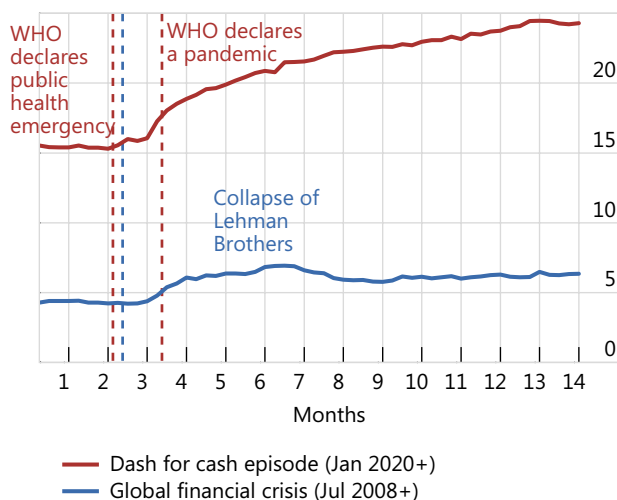
corporates attempted to tap capital markets, demand for US dollar liquidity increased from foreign borrowers, non-government money market funds (MMFs) experienced significant outflows, and some open-ended funds saw sizeable redemptions.

On the supply side, reductions in risk appetite, regulatory constraints and operational challenges may have reduced dealers' capacity to intermediate larger flows in some core funding markets. And, while stronger bank capital and liquidity positions helped to prevent a sharp rise in counterparty risks, banks may have been unwilling or unable to deploy substantial amounts of balance sheet capacity in an uncertain and volatile environment. Dealers also faced difficulties absorbing large sales of assets, amplifying turmoil in short-term funding markets. Substantial sales of US Treasuries, by some leveraged non-bank investors and foreign holders, also exacerbated the market dysfunction. This led to a self-reinforcing loop.

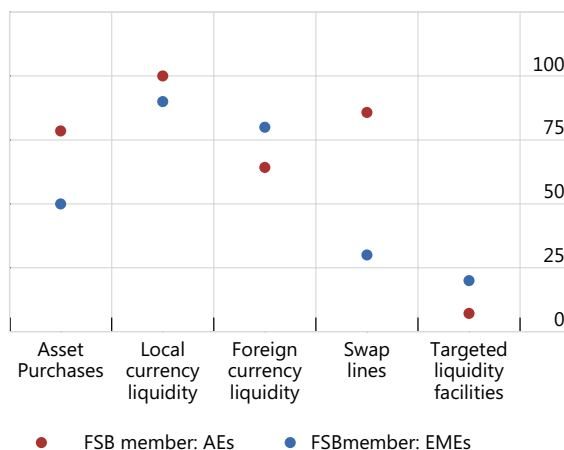
Central banks took unprecedented action. Central bank assets expanded much more than during the 2008 financial crisis (Figure 2a), reflecting the provision of support in different forms and through different channels: asset purchases; liquidity operations, including for US dollars; and backstop facilities designed to provide targeted liquidity to specific financial entities (Figure 2b). Regulatory and supervisory measures as well as fiscal policies complemented these central bank interventions. Securities regulators also took measures to support market functioning.

The policy measures have succeeded in alleviating market strains to date, with announcement effects appearing to be particularly important in restoring confidence and shaping the expectations of market participants. However, the substantial scale of central bank intervention has raised concerns over moral hazard issues in the future, if market participants do not fully internalise their own liquidity risk in times of stress. Moreover, the exceptional measures taken by central banks were not aimed at addressing the vulnerabilities that amplified the stress. The underlying structures and mechanisms that gave rise to the turmoil, therefore, remain in place.

The episode has highlighted a number of issues concerning non-bank financial intermediation (NBFi). One set of issues relates to *particular market activities and mechanisms* that may have caused liquidity imbalances and propagated stress. These include significant outflows from non-government MMFs; similar dynamics, albeit less intense and widespread, in specific types of open-ended funds; redistribution of liquidity from margin calls; the willingness and capacity of dealers to intermediate in core funding markets; and the drivers of dislocations in key government bond markets, including the role of leverage in amplifying the stress. The turmoil also highlighted the increased importance of *interconnectedness* – both within the NBFi sector and with banks – and of *system-wide liquidity conditions* for the resilience of the financial system.

FIGURE 2 POLICY ACTIONS WERE BOLD AND COMPREHENSIVEa) Central bank assets during crisis¹ (US\$ trillion)

b) Policy measures (%)



Note: 1 Includes central bank assets in Canada, the euro area, Japan, United Kingdom and United States.

Sources: Datastream; national data; FSB calculations.

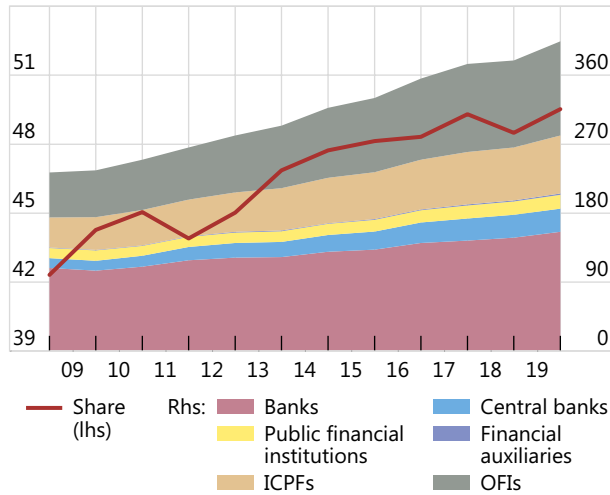
The post-2008 financial reforms were evidenced directly, through the effects of reforms targeting NBFIs, and indirectly, through changes in the broader financial system in response to the new regulatory framework. Naturally, the post-2008 reforms targeting NBFIs focused on addressing vulnerabilities that contributed to the 2008 financial crisis. These included, in particular, measures to contain risks associated with certain forms of structured finance, which have indeed declined and now pose significantly lower financial stability risks.⁶ International standards for the regulation and management of

6 These include asset-backed commercial paper programmes, structured investment vehicles and collateralised debt obligations of subprime and other lower quality credits (FSB 2017a).

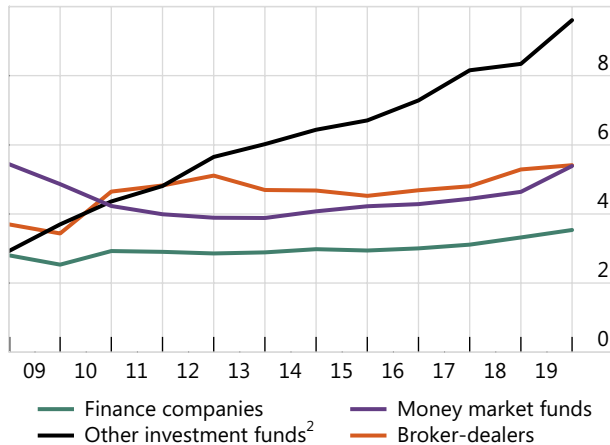
MMFs were also developed post-2008, with the goal of reducing run risk (IOSCO 2012). While these have assisted the development of a global framework for MMF regulation, the vulnerabilities exposed by some types of MMFs in March 2020 suggest the need for further policy action to strengthen this sector. Moreover, the implementation of policy reforms to address structural weaknesses from asset management activities is at an early stage (FSB 2017b).

FIGURE 3 NON-BANK FINANCIAL INTERMEDIATION HAS BEEN GROWING OVER THE PAST DECADE

a) NBFi assets' rising share in total financial assets (left axis: %; right axis: US\$ trillion)



b) Credit assets' held by selected NBFi sub-sectors (US\$ trillion)



Notes: ICPFs = insurance corporations and pension funds, OFIs = other financial intermediaries. Data used in the charts above covers 21 jurisdictions and the euro area. 1 Increases of aggregated data may also reflect improvements in the availability of data over time at a jurisdictional level. 2 Investment funds other than money market funds and hedge funds. Source: FSB, Global Monitoring Report on Non-Bank Financial Intermediation 2020.

The influence that post-2008 regulatory reforms have had on the structure and functioning of the financial system may go well beyond direct effects. Together with other factors – market-driven adjustments, technological changes, and a sustained period of low interest rates – the reforms have resulted in credit risk being increasingly intermediated and held outside the banking sector. The share of assets held by the NBFIs sector has increased to almost half of global financial assets, compared to 42% in 2008, due to both inflows and valuation increases (Figure 3a). As a result, the importance of NBFIs for the real economy has grown. In particular, the role of investment funds as holders of credit assets has expanded considerably (Figure 3b). At the same time, business models in, and financial services provided by, the NBFIs sector have become more diverse.

4 CHALLENGES FOR FINANCIAL STABILITY POLICY PERSIST

The pandemic is still ongoing and may yet test the resilience of the global financial system, not least through deteriorating credit quality of non-financial borrowers. While economic forecasts have been revised upwards, uncertainty remains high against the backdrop of uneven vaccination progress, the continuation of containment measures, and signs of divergent recovery speeds across regions. The associated reduction in firm revenue – and consequent additional borrowing by some firms – are adding to already high debt levels in parts of the non-financial corporate sector.

Growing vulnerabilities in the non-financial corporate sector may increasingly affect banks. Bank capital ratios have held up so far and provision charges rose more than risk-weighted assets in advanced economies in 2020 (IMF 2021). However, the current low level of corporate insolvencies seems predicated on continued policy support, including targeted measures such as bankruptcy holidays and financial support, as well as broader economic stimulus. The results of stress-testing exercises completed to date suggest that the largest banks are well capitalised and will remain resilient under a range of recovery scenarios (e.g. Bank of England 2020, FRB 2020, IMF 2020). Yet there may be questions about banks' willingness to sustain real economy financing in an environment of deteriorating non-financial sector credit quality.

A key issue, therefore, concerns the use of bank capital buffers going forward. Capital and liquidity buffers are an important feature of the Basel III framework, complementing the minimum Basel III capital requirements. The emphasis placed on buffers in the Basel III framework is a response to the experience during the 2008 financial crisis, when forced bank deleveraging resulted in a sharp tightening of global liquidity conditions and bank lending, which, in turn, exacerbated the global economic downturn. Buffers allow banks to absorb losses during a downturn, while discouraging them from excessive deleveraging so that they can continue to provide financial services to the real economy.

In response to Covid-19, authorities released countercyclical capital buffers immediately, where they were in place. Authorities also took steps to enable and encourage the use of discretionary and regulatory capital buffers.⁷ Nevertheless, banks do not appear to have drawn down their capital buffers. To some extent, this may reflect current credit market conditions, including subdued credit losses and demand. Other factors, however, may impede the use of buffers going forward, including bank managements' concerns about adverse effects on bank equity valuations, credit ratings and funding costs, and capital drawdowns interacting with capital distribution restrictions (IMF 2021). Addressing such impediments to buffer usability may lie well beyond regulatory or supervisory actions.

Another question is whether declining corporate credit quality may catalyse significant procyclical effects in the financial system. Notwithstanding the action the G20 has taken since the 2008 financial crisis, concerns about excess procyclicality persist. External credit ratings remain the most commonly used source of credit assessment by investors, not least because they are widely available. The March 2020 experience suggests that passive investors do have some discretion about the timing of sales and bond rebalancing can be delayed in periods of extreme market stress. However, further mass downgrades could be impactful in stressed times, particularly if they pull entities down from investment grade to high yield ('fallen angels'). Emerging market economies may be particularly susceptible to downgrades, given the existence of sovereign rating ceilings that constrain the ratings of many domestic issuers and the greater sensitivity of external capital flows. Concerns have also been expressed about the potential procyclicality of the new expected credit loss (ECL) accounting frameworks regime. To alleviate the impact of the pandemic on their ECL, banks appear to have used the flexibility inherent in these frameworks to take account of the mitigating effects of support measures. They also used the greater flexibility introduced by the Basel Committee in deciding whether and how to phase in the impact of ECL on their regulatory capital.

Elevated financial stability risks also call for continued efforts to address existing vulnerabilities. Strengthening the resilience of NBFIs, while preserving its essential functions and benefits, is a priority in this regard. The efforts of the international regulatory community, coordinated by the FSB, focus, in the short-term, on work to examine and – where appropriate – address specific risk factors and markets that contributed to the amplification of the shock. A first important step will be recommendations for strengthening the resilience of MMFs, which the FSB will publish for consultation in July. Complementing work to address financial stability issues associated with specific NBFIs activities or mechanisms, the FSB is also working to enhance the understanding of systemic risks in NBFIs and the financial system as a whole, and assessing policies to address systemic risks in NBFIs, including the adequacy of policy tools and the concept and desired level of resilience in NBFIs.

⁷ The Basel Committee on Banking Supervision (BCBS) issued a statement in June 2020 explaining that capital buffers are designed to be used in current circumstances and reiterated the same message in September (BCBS 2020b). A number of jurisdictions have done the same.

5 INTERNATIONAL COORDINATION HAS ADAPTED TO EVOLVING NEEDS

The global nature of the Covid shock has demonstrated once again how interconnected the global financial system is. This has underlined the critical role played by organisations, such as the FSB, in providing a rapid and coordinated response to support the real economy, maintaining financial stability, and minimising the risk of market fragmentation.

The FSB is uniquely placed to promote coordination and information exchange on global financial stability. With its composition of G20 finance ministries, central banks, international financial institutions, supervisory and regulatory authorities, standard-setting bodies (SSBs), and regional groups, the FSB brings together the key authorities responsible for financial stability globally. Embedded in the FSB's structure is a framework for the identification of systemic risk in the financial sector, for framing the policy actions that can address these risks, and for overseeing implementation of those responses.

Global policy coordination through the FSB has been evolving alongside the pandemic. At the beginning of the pandemic, the FSB drew on its diverse membership to assess current vulnerabilities in the financial system and provide risk assessments to policymakers. The FSB facilitated a daily information exchange of financial policy responses taken by its members in response to Covid-19, which informed discussions of evolving financial system risks and the design of national policy responses. This helped jurisdictions to respond quickly and consistently to the effects of Covid-19.

FSB members also worked closely to coordinate action – including financial policy responses in their jurisdictions – to maintain global financial stability, keep markets open and functioning, and preserve the financial system's capacity to finance growth. External communication became more joined up, with the FSB, international organisations and SSBs communicating clearly on regulatory and supervisory measures among its member jurisdictions, reinforcing each other's messages about policy coordination, and issuing joint communiqués on specific topics where appropriate.

Additionally, FSB members agreed a set of principles to underpin policy measures taken in response to Covid-19, and to reiterate their commitment to common international standards (FSB 2020d). The principles state that:

1. Authorities will, individually and collectively through the FSB and SSBs, monitor and share information on a timely basis to assess and address financial stability risks from Covid-19, so as to maximise the benefit of a global policy response.
2. Authorities recognise, and will make use of, the flexibility built into existing financial standards – including through the use of firm-specific and macroprudential buffers – to sustain the supply of financing to the real economy, to support market functioning and to accommodate robust business continuity planning.

3. The FSB, SSBs, and authorities will continue to seek opportunities to temporarily reduce operational burdens on firms and authorities, so as to assist them in focusing on Covid-19 response. This includes, for instance, delaying implementation deadlines, reprioritising timetables for initiatives in other policy areas, or providing flexibility in technical compliance rules.
4. Authorities' actions will be consistent with maintaining common international standards, given that these provide the resilience needed to sustain lending to the real economy, and preserve an international level playing field. Such actions will not roll back regulatory reforms or compromise the underlying objectives of existing international standards.
5. Authorities will coordinate – through the FSB and SSBs – the future timely unwinding of the temporary measures taken, to assist in returning financial conditions and firms' operations to normal, in a smooth and consistent manner, and to maintain financial stability in the longer term.

Guided by these principles, FSB member authorities have made use of the flexibility built into existing financial standards (FSB 2020e). The large majority of these measures make use of the flexibility embedded in the Basel III framework or in forthcoming Basel standards. These measures are mainly capital or liquidity-related, and aim to support banks' ability to continue lending and meet their liquidity needs. In a few cases, individual temporary measures have gone beyond the flexibility available in international standards, in order to respond to extreme financial conditions and provide additional operational flexibility to financial institutions.

As the pandemic has progressed, the FSB has placed greater emphasis on understanding how policies are working. The FSB has submitted a number of reports on the financial stability impact of the Covid-19 pandemic and policy responses to the G20. These reports provide updates on financial stability developments and risks relating to Covid-19. The reports synthesise policy measures jurisdictions have taken in response to Covid-19 and provide an assessment of the effectiveness of these responses.

Attention is now turning to considerations around the extension of, or exit from, support measures (FSB 2021b). The FSB has been sharing information on policy responses and their relationship to the potential paths of economic recovery. The FSB is also identifying indicators to help assess the efficacy of policy actions. This will provide policymakers with a better understanding of the consequences of their interventions and a mechanism to share lessons learned with policymakers from other jurisdictions.

6 CONCLUSION

As efforts to stem the Covid-19 pandemic progress, policymakers will need to form a view on whether and when to unwind support in a way that preserves a resilient and well-functioning financial system. Withdrawing support before the recovery is fully under way could be associated with significant immediate risks to financial stability. It could produce adverse procyclical effects; permanently reduce the growth potential of the economy through unnecessary insolvencies and unemployment; and affect banks' balance sheets through increases in non-performing loans. Premature withdrawal of some support measures could also risk a sudden adjustment in asset prices and an increase in borrowing costs. Moreover, it could create negative international spillovers, which are likely to be more material in adverse scenarios when there are cliff effects. On the other hand, financial stability risks may gradually build if support measures remain in place over a long period. Extending support measures risks distorting resource allocation, postponing necessary structural adjustment in the economy and draining fiscal resources. Moreover, the longer support measures last, the greater the concerns about debt overhang, which would depress investment and growth.

Policymakers have a number of options to manage such trade-offs (FSB 2021b). These options are essentially variations of the theme of gradualism: ensuring that measures are targeted; requiring beneficiaries to opt in; making the terms of support progressively less generous; and careful sequencing of withdrawal. Overall, a flexible, state-contingent approach can help to minimise financial stability risks, conserve fiscal resources, and promote smooth economic adjustment. Consistent and timely communication, akin to forward guidance, can help to alleviate uncertainty and the risk of abrupt adjustments in the market.

The G20 regulatory reforms that followed the 2008 global financial crisis have served the financial system well during the March 2020 turmoil and the time since. The observation that those parts of the financial system where progress in implementing agreed reforms has been greatest – core banking systems, central clearing – were resilient suggests that completing the remaining work on the post-2008 reforms should remain a key element of the international reform agenda. Such work includes full and consistent implementation of standards, but also the rigorous evaluation of their effects to ensure that they work as intended.

At the same time, the Covid-19 experience to date has also given rise to a number of questions that may warrant the attention of financial stability authorities going forward. A first set of issues relates to the cyclical behaviour of the financial system, and the role that regulation plays in this context. The Covid-19 shock and the ensuing policy response has resulted in a highly unusual trajectory of credit risk and losses. This complicates assessments of how sensitive credit supply is to changes in economic conditions and policy adjustments and whether procyclical mechanisms might kick in at some point if credit

risks were to rise. More work may be needed to better understand the mechanisms that help to absorb or amplify risk in today's financial system, and potentially draw lessons for the design and calibration of regulatory instruments.

A second set of issues relates to structural changes in financial intermediation, and in particular the growth of NBFIs. As credit risk is being increasingly intermediated and held outside the banking sector, market liquidity has become more central to financial resilience. In turn, a better understanding of the behaviour and vulnerabilities of different types of market participants and their interconnections is required to identify amplification channels in the financial system and to draw lessons about the overall resilience of the system. Adopting a system-wide perspective on these issues presents significant challenges for authorities given the difficulties in collecting relevant data, mapping the transmission of risks through the financial system, and having the policy tools to respond as needed. The FSB has an important role to play in reconciling work on this front, as reflected in its NBFIs work programme (FSB 2020a).

A third set of issues relates to digital innovation. The pandemic has accelerated digitalisation, not least to support remote working arrangements. This, in turn, has underscored the importance of effective operational resilience – including related to outsourcing and use of third-party service providers – and cyber security arrangements. More generally, the boost to innovation, for instance in payments services, serves as a reminder that innovation may bring benefits in terms of financial access and efficiency, but may also give rise to new risks to financial stability. Such potential risks, including from structural shifts in market share and profits between incumbents and new entrants, may warrant particular attention during a post Covid-19 recovery.

The FSB will continue to support international cooperation on all these issues. It will assess factors that policymakers need to consider in preparation for an orderly unwinding of support measures, once appropriate, in order to avoid unintended effects across sectors and jurisdictions. The FSB will also work on drawing lessons from the pandemic from a financial stability perspective. The Italian G20 Presidency has asked the FSB to report on initial lessons learned from the Covid-19 pandemic this year. While these lessons will remain tentative at this stage, they will be instructive for future regulatory reforms as we navigate our way out of the Covid-19 crisis.

REFERENCES

BIS – Bank for International Settlements (2008), “Overview: global financial crisis spurs unprecedented policy actions”, [Quarterly Review](#), December, pp. 1-24.

BIS (2020), [BIS Annual Economic Report 2020: A global sudden stop](#), 30 June.

Bank of England (2020), [Financial Stability Report August 2020](#), 6 August.

BCBS – Basel Committee on Banking Supervision (2020a), [Basel III Monitoring Report](#), 10 December.

BCBS (2020b), [“Basel Committee meets; discusses impact of Covid-19; reiterates guidance on buffers”](#), 8 June.

FRB – Federal Reserve Board (2020), [“December 2020 Stress Test Results”](#), 18 December.

FSB – Financial Stability Board (2017a), [“Assessment of shadow banking activities: risks and the adequacy of post-crisis policy tools to address financial stability concerns”](#), 3 July.

FSB (2017b), [“Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities”](#), 12 January.

FSB (2020a), [Holistic Review of the March Market Turmoil](#), 17 November.

FSB (2020b), [Implementation and Effects of the G20 Financial Regulatory Reforms: 2020 Annual Report](#), 13 November.

FSB (2020c), [Resolution Report: ‘Be prepared’](#), 18 November.

FSB (2020d), [“COVID-19 pandemic: Financial stability implications and policy measures taken”](#), 15 April.

FSB (2020e), [“COVID-19 pandemic: Financial stability implications and policy measures taken – Report to the G20”](#), 15 July.

FSB (2021a), [Evaluation of the effects of too-big-to-fail reforms: Final Report](#), 31 March.

FSB (2021b), [COVID-19 support measures: Extending, amending and ending](#), 6 April.

IMF – International Monetary Fund (2020), [Global Financial Stability Report: Bridge to Recovery](#), 13 October.

IMF (2021), [Global Financial Stability Report, April 2021: Preempting a Legacy of Vulnerabilities](#), 6 April.

International Organization of Securities Commissions (2012), [Final Report on Policy Recommendations for Money Market Funds](#), 9 October.

ABOUT THE AUTHOR

Dietrich Domanski has been Secretary General of the FSB since January 2018. The FSB promotes international financial stability by coordinating national financial authorities and international standard-setting bodies in developing strong regulatory, supervisory and other financial sector policies.

Previously, Dietrich was Deputy Head of the Monetary and Economic Department and Head of Economic Analysis at the Bank for International Settlements, working on a wide range of financial stability issues.

Dietrich joined the BIS in 2000 and held various senior positions in the Monetary and Economic Department. Before joining the BIS, Dietrich headed the capital markets group in the Economics Department of the Deutsche Bundesbank. He was also an International Monetary Fund advisor to Bank Indonesia during the 1990s Asian crisis.

CHAPTER 24

Macroprudential bank capital actions in response to the 2020 pandemic

405

Rochelle M. Edge and J. Nellie Liang¹

Board of Governors of the Federal Reserve System; Brookings Institution

1 INTRODUCTION

At the onset of the Covid crisis, governments around the world responded with a range of economic policy actions, including macroprudential actions. A prominent type of macroprudential action was to provide regulatory capital relief to banks, thereby reducing a capital-based incentive to tighten lending in response to the pandemic's effect on the economy. We document in this chapter that for the sample of 56 countries whose Basel III macroprudential capital features were studied in Edge and Liang (2020), 41 countries took at least one type of action to provide capital relief.²

In contrast to the global financial crisis in 2008, banks in many countries were in a position of strength at the onset of the pandemic. As a result, countries were able to take macroprudential capital relief actions to prevent deleveraging and amplifying stress in the economy without risking the safety and soundness of banks. Countries had implemented Basel III with higher minimum capital requirement and a set of buffers, including static capital buffers, such as the capital conservation buffer (CCoB), capital buffers for global and domestic systemically important banks (G-SIB and D-SIB surcharges) and the time-varying countercyclical buffer (CCyB). Under Basel III, a drawdown of buffers below the full capital buffer requirement would trigger automatic reductions in shareholder distributions and compensation to preserve resilience, but the release or reduction of the CCyB does not because this action reduces the buffer requirement.

We categorise four types of bank capital relief actions. One type is a reduction in the CCyB and a second is a reduction of other capital buffers, mainly the static buffers described above. A third type is offering non-buffer relief by extending compliance deadlines or redefining capital regulations. We also consider temporary loan forbearance programs as

1 The views expressed are our own and do not represent the views of the Federal Reserve Board or its staff or of the Brookings Institution. We thank Craig Chikis and Kadja Yilla for excellent research assistance.

2 For an early discussion of the broader range of economic policy actions that countries took in the Covid crisis, see Benediktsdottir et al. (2020). Other discussions of macroprudential actions taken in the Covid crisis, albeit for smaller sets of countries, include Aikman (2020) and Neir and Olafsson (2020).

a capital relief action since it would permit banks to avoid higher capital charges on loans that might move temporarily into past due status due to the pandemic. In our sample, 41 countries took a total of 64 actions in these four categories in early 2020.³

Of the 16 countries that had activated the CCyB before 2020, all but one relaxed it. This near-universal relaxation is consistent with the intent of the CCyB and, in all but one of these countries, authorities either instructed, urged, conveyed the expectation, or recommended to banks to not distribute the freed-up capital to shareholders, and instead retain it so that it would be available to support lending. Moreover, banks in the 15 countries that released the CCyB had significantly higher capital ratios than banks in other countries. Authorities in 18 countries relaxed other capital buffers, for which there was considerable variation in the types. While use of these other buffers could trigger automatic reductions in dividends and compensation, raising questions about banks' willingness to use them, some countries also imposed separate restrictions on dividends. In addition, 16 countries provided non-buffer capital relief by either extending deadlines for compliance or redefining regulations, with two countries doing both. These latter types of actions are especially idiosyncratic and were taken mainly by countries that had not activated the CCyB. In addition, banks in countries that offered non-buffer capital relief actions had significantly lower pre-Covid capital ratios than banks in countries that relaxed the CCyB.

Countries could take actions in more than one category, and we document that 17 countries took actions in two or more categories. Those with a CCyB set above zero at the onset of the Covid crisis were more likely to take only the single action of reducing their CCyB. In contrast, countries that took other types of actions were more likely to take multiple types of actions, thus increasing the complexity of their overall policy response to the pandemic.

We offer some tentative conclusions based on these tabulations, recognising that more research is needed to fully understand how countries determined their capital relief actions. We suggest that when unexpected stress events occur, the CCyB offers important advantages to other capital relief actions in terms of bank resilience and better policymaking. Countries that had activated the CCyB before the pandemic had statistically significant higher bank capital ratios, indicating greater ability to reduce requirements without raising concerns for the safety and soundness of the banking system. In contrast, countries that offered non-buffer relief actions, such as extending compliance deadlines and redefining regulations, had statistically significant lower starting bank capital ratios and the actions had less clear implications for safety and soundness. In addition, reducing the CCyB is a simple and highly transparent action with clear implications for capital requirements, which aids both banks and its creditors, while reducing static capital buffers raises questions about usability because of constraints on shareholder payouts. Moreover, countries that relaxed the CCyB were more likely to take this single action,

3 A country might take more than one action within a category, such as redefining multiple regulations, but we count that as one action.

while countries that did not have a CCyB were more likely to take multiple actions, and these tended to be idiosyncratic, suggesting more complex and less transparent policy. We conclude with some questions for further research.

2 BASEL III MACROPRUDENTIAL CAPITAL BUFFERS

All 56 countries in our dataset had put in place the Basel III capital framework before the onset of the Covid pandemic. The Basel III capital framework features higher minimum capital requirements relative to the framework prior to the global financial crisis and higher quality capital requirements, with more conservative definitions of bank capital and risk-weighted assets. Additionally, there are a number of capital buffers that sit on top of the minimum to increase banks' resilience to macroeconomic and financial shocks, and to reduce the procyclicality and amplification of shocks that could lead to banks pulling back on lending and reinforcing the downward momentum of the economy. These buffers include the static capital conservation buffer (CCoB), the static capital surcharges for global and domestic systemically important banks (G-SIBs and D-SIBs), and a static systemic risk buffer (SyRB) in EU countries, and the time-varying countercyclical capital buffer (CCyB). These buffers were phased in by 2019, although in some cases they were phased in few years earlier.

Static capital buffers, such as the CCoB and SIB surcharges, can be viewed as macroprudential tools because they can, in principle, be drawn down when bank losses increase in an economic downturn, averting a need for banks to immediately rebuild capital during that period of stress. The CCoB generally is set at 2.5% Tier1 common equity to risk weighted assets. The static capital surcharge buffers (the G-SIB and D-SIB surcharges, and SyRB) are designed to counter the greater structural risks to the financial system posed by large, highly complex banking organisation and outsized losses on the broader financial system and economy if such a bank were to fail. These surcharges can be as high as 3.5% of risk-weighted assets.⁴

However, using static buffers implies automatic restrictions on dividend payments, share buybacks, and staff bonus payments, and these restrictions increase as more of the buffer is used. These distribution constraints help to maintain resilience, but they can also make banks more reluctant to use the buffer. The CCyB, in contrast, is designed to directly address cyclical systemic risks. The CCyB is meant to be increased during an economic expansion when system-wide risks are building so that the banking system would have a larger buffer to absorb future higher potential losses when the economy turns down. After stresses materialise and losses are likely incurred, the CCyB would be released. This release has the effect of lowering the buffer requirement at which the automatic

⁴ The G-SIB is based on a fixed weighting scheme for 11 specific indicators, and the highest G-SIB surcharge that could be assessed was 3.5% in 2019. The D-SIB surcharge is based on similar principles. If a bank has both a G-SIB and D-SIB surcharge, and a SyRB in EU countries applying to it, only the highest charge would apply.

restrictions on payouts would begin.⁵ By being released when a downturn commences, the CCyB aims to support the provision of credit. Banks are generally given a year to raise their capital ratios to meet a higher CCyB requirement, but the effects of the CCyB's release is immediate.

3 ACTIONS TO RELAX BANK CAPITAL CONSTRAINTS

For our review of bank capital relief actions, we build on Edge and Liang (2019, 2020) and consider the actions in 56 countries, of which 34 are advanced economies and 22 are emerging market or developing economies.⁶ The main data sources for capital relief actions are the Yale School of Management (SOM) Program on Financial Stability Covid-19 Financial Stability Response Tracker (as of 10 May 2020) and the IMF's Covid-19 Policy Tracker.⁷

TABLE 1 CAPITAL RELIEF ACTIONS TAKEN IN 56 COUNTRIES

	No. of countries taking the action
Released or reduced the CCyB	15
Relaxed other capital buffers	18
Offered non-buffer capital relief	16
Implemented loan forbearance programmes	15
	No. of countries taking different numbers of actions
No action	15
One type of action	24
Two types of actions	11
Three types of actions	6

We adopt mainly the Yale SOM categories for capital relief actions: released or reduced the CCyB; relaxed other capital buffers; offered non-buffer capital relief (which includes redefining capital regulations and postponing capital regulation compliance dates); and

5 Both SIB surcharges and the CCyB expand the CCoB and not satisfying the expanded CCoB results in the same capital conservation rules as the CCoB.

6 We drop Colombia and Israel from the sample as in Edge and Liang (2019, 2020) because these two countries had not implemented Basel III by 2019.

7 For the Yale SOM Policy Tracker, see <https://som.yale.edu/faculty-research-centers/centers-initiatives/program-on-financial-stability/covid-19-crisis>. For the IMF's Covid-19 Policy Tracker, see <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

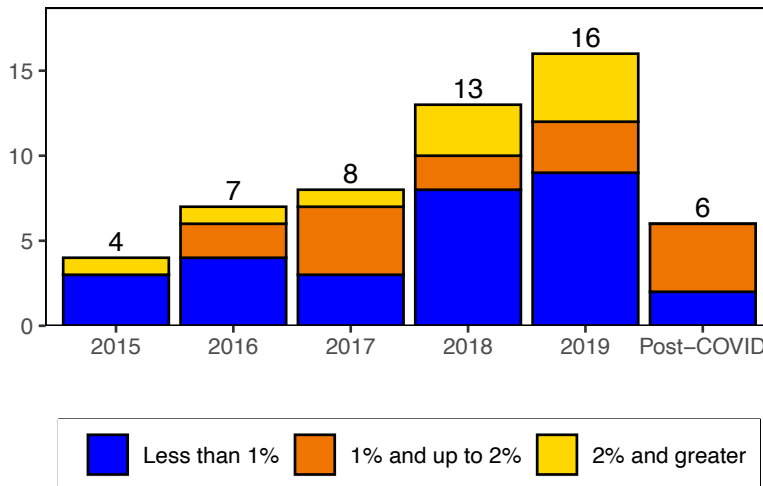
implemented loan forbearance programmes. Table 1 reports how many countries used each of these ways to provide capital release. The top panel illustrates that a variety of actions were taken, and the lower panel shows the number of types of actions that countries took.

Released or reduced the CCyB

As described in the previous section, the CCyB is intended to be released after a downturn commences in order to support the provision of credit and other financial services. In our sample, 16 countries had set the CCyB above zero in 2019. Nearly all of these, 15 countries, released or reduced their CCyBs in response to the pandemic.

Figure 1 provides more information on the use of the CCyB. Its use had increased substantially from 2015 to 2019, as the economic and financial cycle expanded in the years before the pandemic hit. In 2019, seven of the 16 countries with non-zero CCyBs set this buffer above 1%, and three of these were set at 2.5%, the maximum level eligible for reciprocity treatment. Post-Covid, with 15 of these 16 countries releasing or reducing the CCyB, this buffer remained above zero in six countries, where in all of these six countries the levels of the CCyB were below 2%.

FIGURE 1 NUMBER OF COUNTRIES THAT HAVE A CCyB ABOVE ZERO AND THE SIZE OF THE BUFFER



Note: The figure includes Switzerland, which has a CCyB applied to residential real estate.

By releasing the CCyB, the capital buffer requirement at which automatic cuts in distributions of shareholder distributions and executive compensation would take effect is reduced. The reduction in the required buffer reflects that the CCyB was raised in anticipation of cyclical losses, which can reduce the costs of the trade-off between ensuring resilience and supporting credit and economic stability when it is released.

Still, a release of the CCyB might not achieve these purposes if banks were to distribute the capital immediately rather than use it to absorb losses and preserve the ability to support lending. For 14 of the 15 countries, authorities instructed, urged, conveyed the expectation, or recommended to banks to not distribute the freed-up capital as dividends or share buybacks.⁸ For example, the European Banking Authority issued a statement that the capital relief measures “are to be used to finance the corporate and household sectors and not to increase the distribution of dividends or make share buybacks for the purpose of remunerating shareholders”.

Relaxed other capital buffers

Many countries had not set the CCyB above zero, but they could relax other capital buffers to support the provision of credit. We document that 18 countries released other buffers, with three countries (Denmark, Hong Kong, and the UK) also releasing or reducing the CCyB (Table 1). These actions were fairly heterogeneous across countries and included countries reducing their D-SIB surcharges and SyRBs, permitting banks to operate with capital levels inside their CCoB, and permitting banks to operate capital below Pillar 2 requirements. All of the countries that relaxed these other buffers also issued statements to banks to restrict the distribution of the freed-up capital as dividends or share buybacks.

Some questions have been raised about how banks viewed these releases and the usability of buffers. For example, usability could be less attractive if guidance to encourage use of the buffers did not relax the automatic cuts in distributions, it increased the risk of heightened supervisory scrutiny in the future, or there were concerns it would trigger negative market reactions (Behn et al. 2020). The responses to the pandemic also have initiated questions about whether the buffers are appropriately balanced between structural and dynamic buffers. For example, the De Nederlandsche Bank reduced the SyRB and noted that “[i]n due course, the lower requirement will be offset by a gradual increase of the countercyclical capital buffer (CCyB), which will ultimately restore the aggregate buffer requirements for these banks to current levels”.⁹ In the US, the Vice Chair for Supervision suggested exploring whether to set the CCyB at a higher baseline level during normal times, allowing greater scope for dynamic adjustments (Quarles 2019).

8 The one country that did not take any action on bank capital distributions has a banking system in which most of its largest banks are foreign owned. For summaries of the various capital distribution actions that regulatory agencies took during Covid-19, see Awad et al. (2020b) and Svoronos and Vrbaski (2020).

9 See, <https://www.dnb.nl/en/actueel/dnb/dnbulletin-2020/dnb-temporarily-lowers-bank-buffer-requirements-to-support-lending/> More specifically, the DNB stated that it planned to restore the buffer requirements in due course by gradually increasing the CCyB requirement from 0% to a neutral level of 2% and that the buffer would be built up gradually once conditions have normalised.

Offered non-buffer capital relief

This category includes actions that redefine capital regulations with the goal to providing capital relief and the postponement of capital regulation compliance dates. We document that 16 countries used these types of actions, with two countries (Singapore and the US) using both. Redefining capital regulations includes, for example, actions that change the capital instruments that can be used to meet tier 2 capital requirements, change the risk weights on loans (which in some but not all cases were loans associated with loan guarantee programs), or change the definition of eligible retained income applicable to capital ratios moving into the Basel III capital conservation buffer. The postponement of capital regulation compliance dates includes the delay in some countries of the phasing in of some Basel III risk frameworks, as well as some policies – such as minimum risk weights on some types of loans – that might have been specified when the economy was stronger. Some of the countries (11 out of 16) also imposed or recommended not to distribute the freed-up capital as dividends or share buybacks, though the share is lower than the near 100% for relaxing the CCyB and other capital buffers.¹⁰

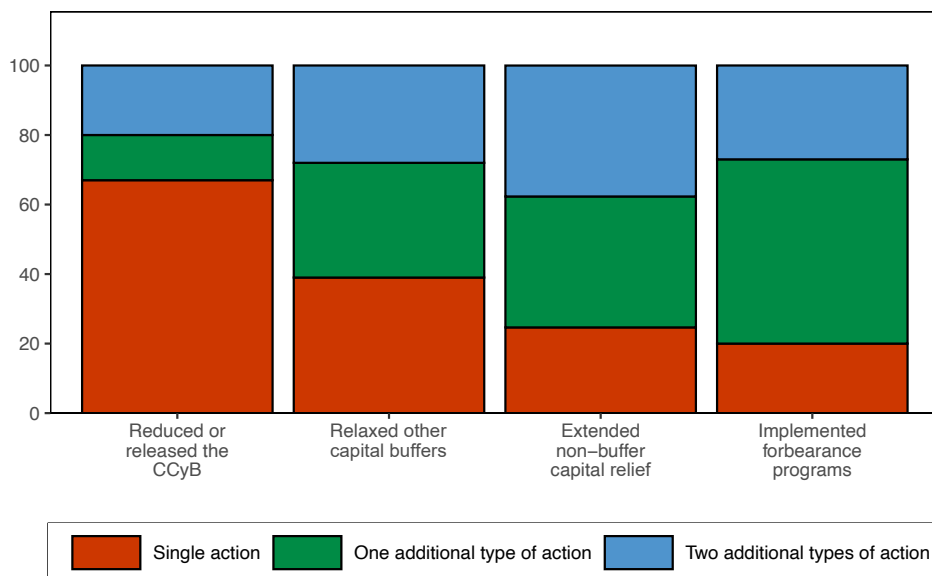
Implemented loan forbearance programmes

We document that 15 countries implemented this type of action. We include loan forbearance as a capital relief action because forbearance permits banks to avoid higher capital charges on loans that might move temporarily into past due status because of the pandemic. Indeed, the IMF generally frowns upon loan forbearance programmes because they could allow banks to cover up bad loans rather than taking more expedient write-offs.¹¹ The recent forbearance programmes, however, appeared to be generally put in place primarily to sustain the financial conditions of households and businesses, and their implications for bank capital and bank lending are secondary. Similar to the category of the offer of non-buffer relief actions, 11 of 15 countries also imposed or recommended to banks that they not distribute any freed-up capital from this action.

10 Of the 41 countries that took at least one capital actions, we could not determine for one country (Philippines) whether their prudential authorities imposed or recommended capital distributions.

11 See Awad et al. (2020a), who discuss the trade-offs associated with loan forbearance and in this context note the loss of information that can result from forbearance and the wider losses in confidence in the banking system that this can imply due to the market not being able to distinguish weak from sound banks.

FIGURE 2 PERCENTAGE OF COUNTRIES BY NUMBER OF TYPES OF CAPITAL RELIEF ACTIONS TAKEN GIVEN THE TYPE OF CAPITAL RELIEF ACTION TAKEN



Number of types of capital relief actions taken

Overall, many countries took actions to relieve possible capital constraints at banks. Of the 56 countries in our dataset, 41 countries took at least one action and 17 countries took two or more actions. Figure 2 illustrates the breakdown of the number of capital relief actions taken, by type of action. For the 15 countries that reduced or released their CCyB, 67% (ten countries) took no other capital relief actions, 13% (two countries) took one additional action, and 20% (three countries) took two additional actions. In terms of the other types of capital relief actions, which are less structured and more idiosyncratic than CCyB, the share of countries that take more than one type of action is much higher, from 75% to 80% percent for the countries that extended non-capital relief or implemented loan forbearance programs.

This mix of actions highlights that when countries reduced the CCyB, they undertook relatively few other actions to relax capital constraints. While we cannot say that is because they did not need to take other actions – either because the CCyB relaxation was sufficiently large or the economic circumstances did not require other actions – the single action suggests greater transparency and less complexity of actions than strategies taken by other countries, and would be consistent with better policy implementation afforded by the CCyB.

4 COUNTRIES' BANK CHARACTERISTICS

We next look at whether there are systematic differences in bank capital ratios and in the type of bank regulator across countries based on the types of capital relief actions and number of actions taken. We find that bank capital ratios differ significantly across countries for some types of capital relief actions (upper part of Table 2). Countries that reduced or released their CCyBs had significantly higher capital ratios than other countries (20.5% versus 17.7%). While this is perhaps not surprising since a positive CCyB, if not offset by banks actions to reduce their own management buffers, would lead to higher capital ratios, it reinforces that the CCyB allows countries to release with less concern for adverse effects in terms of safety and soundness.¹²

In contrast to these differences based on the CCyB, countries that extended non-buffer capital relief to banks have average capital ratios that are significantly lower than other countries (16.6% versus 19.2%). The lower capital ratios in countries that offered capital relief with non-buffer actions suggest they had less scope for simply reducing buffers, and instead implemented more idiosyncratic and less transparent actions.

We do not find, however, that there is a material difference in the capital ratios of countries that take only one type of capital relief action and those that take multiple types of actions.

Turning to governance, we look at whether there are differences in actions taken based on whether the prudential regulator is at the central bank or is an independent agency (lower part of Table 2). In our total sample of 56 countries, the prudential regulator is the central bank for 59% of the countries. In earlier work (Edge and Liang 2020), we had found no statistical significance in activating the CCyB from 2016 to 2019 based on whether the prudential regulator was the central bank or an independent agency, and because nearly all of the countries that raised the CCyB released it, there also is no distinction in the releases.

However, the proportion of countries where the prudential bank regulator is also the central bank is higher among countries that offered non-buffer capital relief than among those that do not (75% versus 53%), and similarly for those that implemented forbearance programmes versus those that do not (73% versus 54%). These differences, while not statistically significant, are consistent with central banks being more likely to take capital relief actions because they are more cognizant of the risks of tighter bank capital constraints reinforcing an economic downturn. Additionally, a greater share (71% versus 54%) of prudential bank regulators are central banks in countries that have taken more than one capital relief action, reflecting the fact that the prudential regulator is more frequently the central bank in countries that extend non-buffer capital relief and implement forbearance programmes.

12 There is no meaningful difference in the capital ratios of countries that did not take any actions and those that took at least one action (18.8% versus 18.4%, respectively).

TABLE 2 CHARACTERISTICS OF COUNTRIES' BANKING SECTORS

	Countries banking sectors' equity-to-RWA	
	Countries taking the capital relief action	Countries not taking the capital relief action
Released or reduced the CCyB	20.4***	17.8***
Relaxed other capital buffers	18.4	18.6
Offered non-buffer capital relief	16.6**	19.2**
Implemented loan forbearance programmes	17.9	18.8
	Countries taking two or three types of capital relief actions	Countries taking one type of capital relief actions
	18.6	18.3
Share of countries where the prudential regulator is the central bank		
	Countries taking the capital relief action	Countries not taking the capital relief action
Released or reduced the CCyB	0.60	0.59
Relaxed other capital buffers	0.50	0.63
Offered non-buffer capital relief	0.75	0.53
Implemented loan forbearance programmes	0.73	0.54
	Countries taking two or three types of capital relief actions	Countries taking one type of capital relief actions
	0.71	0.54

Notes: *** denotes the difference in means being significant at the 1% level; ** denotes the difference in means being significant at the 5% level

CONCLUSION

We document numerous and significant bank capital relief actions taken in response to the onset of the Covid-19 pandemic, as banks generally were starting from a position of strength relative to the global financial crisis. These data offer some preliminary insights into macroprudential policymaking, and with time they should allow further study of a number of important questions. First, the new dynamic capital buffer in Basel III, the CCyB, was reduced or fully released in all but one of the countries that had set its level above zero before the pandemic. As economies recover, these data can be used to assess the effects of the release of the CCyB on the provision of credit and support for the economy, as the tool was designed to achieve. In addition, a significant number of other countries provided relief with other capital buffers as well, but there are suggestions that banks might view these other buffers as less usable than the CCyB. As such, a second important question relates to whether banks will actually use the other buffers in stress periods, and the implications of that behaviour for whether the structural and dynamic capital buffers are balanced appropriately to achieve macroprudential objectives. Finally, the greater number of capital relief actions by countries where the prudential bank regulator is the central bank rather than an independent agency suggests further exploration of the role of governance for macroprudential policymaking.

REFERENCES

- Aikman, D (2020), “The Role of Macroprudential Policy in the Covid Crisis”, King’s College London.
- Awad, R, C Ferreira, E Gaston, and L Riedweg (2020a), “Banking Sector Regulatory and Supervisory Response to Deal with Coronavirus Impact (with Q and A)”, IMF Special Series on Covid-19.
- Awad, R, C Ferreira, A Jociene, and L Riedweg (2020b), “Restriction of Banks’ Capital Distribution during the Covid-19 Pandemic”, IMF Special Series on Covid-19.
- Behn, M, E Rancoita, and C Rodriguez d’Acri (2020), “Macroprudential Capital Buffers – Objectives and Usability”, *ECB Macroprudential Bulletin*, October.
- Benediktssdottir, S, G Feldberg, and J N Liang (2020), “What Macroprudential Policies are Countries Using to Help their Economies through the Covid-19 Crisis?”, Yale School of Management, Program on Financial Stability.
- Edge, R M and J N Liang (2019), “New Financial Stability Governance Structures and Central Banks”, Hutchins Center Working Paper, The Brookings Institution.
- Edge, R M and J N Liang (2020), “Financial Stability Governance and Basel III Macroprudential Capital Buffers” Hutchins Center Working Paper, The Brookings Institution.

Nier, E and T Olafsson (2020), “Main Operational Aspects for Macroprudential Policy Relaxation”, IMF Special Series on Covid-19.

Quarles, R K (2019), “Refining the Stress Capital Buffer”, speech at the Program on International Financial Systems Conference, Frankfurt, 5 September.

Svoronos, J P and R Vrbaski (2020), “Banks’ dividends in Covid-19 Times”, FSI Brief No. 6.

ABOUT THE AUTHORS

Rochelle Edge is a Deputy Director in the Division of Monetary Affairs of the Federal Reserve Board in Washington, DC. In this role she oversees the sections in the Division that cover and analyze developments in U.S. Treasury markets and financial institutions. Prior to assuming her current position in 2017, she worked in the Board’s Division of Financial Stability, where she led teams to operationalize the Basel III countercyclical capital buffer for the United States and to design the macroeconomic scenarios used in the Federal Reserve Board’s CCAR and Dodd-Frank Act stress tests. She received her undergraduate degree from the Australian National University and her Ph.D. from Princeton University, both in Economics.

Nellie Liang is the Miriam K. Carliner Senior Fellow in Economic Studies at the Brookings Institution. Before joining Brookings, she was the founding director of the Division of Financial Stability at the Federal Reserve Board, where she worked to integrate financial stability into the Board’s monetary policy and financial regulatory deliberations. Her current research focuses on financial and macroeconomic stability, credit markets, and financial regulatory and macroprudential policies. She also is a Visiting Scholar at the International Monetary Fund and Lecturer at the Yale School of Management. She holds a Ph.D. in economics from the University of Maryland, and a B.A. in economics from the University of Notre Dame.

CHAPTER 25

Looking forward: Monetary policy post-Covid

417

Olivier Blanchard¹

Peterson Institute for International Economics

Even before Covid, monetary policy was already hampered by the effective lower bound on policy rates. The Covid crisis made it worse, with a need for even lower rates. Thus, the tools introduced and developed since the Global Financial Crisis were ramped up with a few new twists.

Central banks used the limited space they had to decrease policy rates.² The median decrease in the policy rate in advanced economies was 75 basis points. In the euro area, as well as in at least four other countries, central banks explored negative policy rates, although only down to less than a negative 100 basis points. They committed in various ways to ‘low for long’, either through yield curve control commitments, changes in targets, changes in operating policies, or announcements of conditions under which rates would be increased again. They extended liquidity provision to a larger set of financial institutions and for longer maturities, including direct intervention in specific markets. They relaxed collateral requirements. They proceeded to buy both public and private assets on a sustained basis, to decrease their spreads. As a result of all these moves, they increased their already large balance sheets by substantial amounts – 15% of GDP in the US, 24% in Japan, 25% in the euro area.

What has happened in each country is carefully analysed in the other contributions in this eBook. What I want to do in mine is explore a scenario where equilibrium nominal rates become higher and the zero lower bound constraint becomes less relevant. I want to think about the design of monetary policy in that context, based on the lessons just not from Covid but the last 15 years or so. What do we keep? What do we end?

I need to start with two caveats.

The first is that much of what follows takes the form of questions and guesses rather than convincing answers; put another way, it is very much a research agenda. Even as such, I do not pretend to be encyclopedic; there are many issues I do not address.

1 I thank Bill English, Joe Gagnon, and David Wilcox for extremely useful discussions. Thanks also to Anna Stansbury, Patrick Honohan, Philip Lane, Maury Obstfeld, Francois Villeroy de Galhau, and Giovanni Dell’Ariccia.

2 The actions taken by the central banks of seven advanced countries plus the euro zone, and of eight emerging economies are described in detail in a series of contributions to this eBook.

The second is that I am afraid the zero lower bounds constraint may actually be relevant for a long time.³ The so called ‘neutral real rate’ – that is, the safe real rate that generates enough aggregate demand to keep output at potential – has been declining for 35 years, and, while it will recover from its Covid low and may even experience, in particular in the US, a bump due to a strong short run fiscal stimulus, the likelihood is that it will remain low over the medium run. On the central bank side, there is no sign of willingness to revise the inflation target substantially upward and generate consistent 3% or 4% inflation.⁴ Thus, putting the two together, neutral nominal rates are likely to remain low for a long time. At the same time, we probably have approached the limits of further reductions in already negative nominal rates, and more dramatic solutions, such as the elimination of physical cash, do not seem likely to happen soon. Still, it is useful to think about monetary policy in the absence of the constraint, if only as a distant goal, and this is what I shall do here.

Start with how monetary policy was conducted earlier in time, say at the end of the Great Moderation, pre-Global Financial Crisis, and pre-Covid crisis. Perhaps more than at any time in the past, there was wide agreement between academics and central bankers about general principles for both fiscal and monetary policy. Monetary policy was primarily in charge of stabilisation, with the role of fiscal policy largely limited to automatic stabilisers. Central banks had one or two targets, inflation always, output sometimes. ‘Divine coincidence’ – the proposition that under plausible conditions, inflation stabilisation led to output gap stabilisation – implied that one could focus mostly on inflation and attain both goals at once. The basic instrument of policy was a short-run policy rate, leaving the adjustment of all other rates and asset prices to market forces. And, when needed, central banks could follow Bagehot and generously provide liquidity to financial players against good collateral.

We are a long way from this. Should we go back to it, in part or in toto? Here are some thoughts.

ON TARGETS

To state the obvious, central banks must care about both inflation and activity. The traditional justifications for a single target – namely, inflation – are twofold. First, that low and stable inflation is much more important than closing the output gap; few people would make this argument today. Second, that low and stable inflation will actually deliver a zero output gap. The relation of inflation to activity is so poor and so complex,

3 By “relevance of the zero lower bound”, I mean a level of the policy rate which may be positive but is such that the room to decrease it in response to a slowdown in activity remains limited.

4 I continue to think that the best way to avoid the zero lower bound is to increase the inflation target, which would lead to higher nominal rates, but I have nothing to add to my previous arguments on this point, and shall leave it aside.

however, that having inflation as a single target does not make much sense. Thus, de jure or de facto, central banks should have at least two targets – inflation and the output gap – and face the relevant trade-off. This discussion should be behind us.

The inability to deliver a high enough inflation rate for several years has led the Fed to move from conventional inflation targeting to a version of average inflation targeting (AIT). Other central banks are considering a similar move. In its simplest form, such a rule implies that the central bank undoes past deviations of inflation from target, aiming for higher inflation for some time if inflation undershot the target in the past, and aiming for lower inflation if inflation overshot the target.

This simplest form, however, is a non-starter. While it is easy to think of the central bank as committing to higher inflation and thus more expansionary policy in the future when inflation has been low (which was indeed a strong motivation in adopting the rule), it is hard to believe that the central bank will follow through with the other half of the rule. Suppose that inflation has overshot in the past, but that today inflation is at target and there is no output gap. It is hard to see the central bank tightening monetary policy and possibly creating a recession just to undo the excess inflation of the past.

For that reason, the Fed has adopted an asymmetric approach, to overshoot when inflation has been too low, but not to undershoot when it has been too high. This however raises other issues. Suppose that output is at potential and inflation at target. Suppose inflation has been lower than target in the past. In this case, the central bank will aim to generate inflation above the target for some time, to keep average inflation at target. Now suppose instead that inflation has been higher than target in the past. In this case, under the asymmetric approach, the central bank will not try to offset it, so average inflation will be higher than the target. The arithmetic implication is that, to the extent that both cases arise, average inflation over the long term will be higher than target inflation. Put another way, the policy runs the risk of being internally inconsistent.

How worrisome is it? This depends on whether, in the light of average inflation being higher than the target, expectations remain anchored at the target. If they do, then the only cost is higher average inflation than the target over the long term, not a catastrophe. But if they do de-anchor, and one would expect them to eventually do so, then inflation dynamics may become worse.⁵ There are other – more tactical than conceptual – issues with the rule, namely, the fuzziness about how much of the undershoot is offset and over how many years, which is likely to complicate communication and market reactions. Were I another central bank, I would not necessarily adopt that rule.

5 One may argue that higher inflation would not be so bad, and I indeed agree. I worry however that the process may be difficult to control (the same remark applies to the likely overheating associated with the Biden administration stimulus programme). If we are going to de facto accept higher inflation and a higher inflation target, this should be the result of a carefully planned adjustment, rather than the result of a providential accident.

What about other targets? Welfare depends not just on the aggregate level of activity and the inflation rate, but also on their distributional implications. Some have argued, especially since the start of the Covid crisis, that central banks should include more socially ambitious targets – for example, inequality, or the unemployment rates of young black men, or the labour force participation of women. It is important here to understand the limits of this argument. If our current understanding of the inflation mechanism is anywhere near close to correct, there is some measure of unemployment or underemployment consistent with stable inflation, and that the economy cannot deviate durably from that measure, or at most from a range around that measure, without giving up on stable inflation. What this measure is can be debated: whether it is the standard definition of the unemployment rate or whether underemployment also plays some role in the determination of wages is not settled. But there is no reason for the correct measure, whatever it is, to give more weight to disadvantaged groups. Indeed, it could be that insiders such as prime-age white males play an oversize role in wage determination, and that the right measure is not the overall unemployment rate, but something closer to the unemployment rate of prime-age white males. Dealing with the high unemployment rate of disadvantaged groups thus must be primarily the job of structural reforms, of a better educational system, not of monetary policy, with however three exceptions I can think of.

The first is the presence of hysteresis; if overheating the economy, for example, has permanent effects on the labour market participation of some of these disadvantaged groups, this should be taken into account by the central bank. I believe that this effect is present, but of limited macroeconomic scope.

The second is about the choices faced by the central bank between the standard deviation of the output gap and the standard deviation of inflation, the so-called ‘Taylor frontier’. To the extent that recessions are particularly costly for certain disadvantaged groups, the central bank may want to choose a smaller standard deviation for the output gap, i.e. a more aggressive monetary policy, at the expense of a larger standard deviation for inflation.

The third is that different monetary policy tools may have different effects on inequality; I return to this issue below.

ON REGULAR MARKET INTERVENTIONS

Leave aside market disruptions for the moment. The old theory behind intervention only in one market or the determination of one rate, typically a very short maturity rate, was straightforward: the main macroeconomic distortion, requiring the use of active monetary policy in the first place, was nominal rigidities. Such rigidities implied that in the absence of monetary policy intervention, the short interest rate may not be at the right level, that it may be at times too low or too high to keep output at potential. The job of the central bank was thus to set that rate at the right level, and let all other rates – be it on public or private, short-term or long-term liabilities – adjust in response. The adjustment

of these other rates and asset prices was seen as reflecting market forces, themselves reflecting risk preferences, say a consumption capital asset pricing model (C-CAPM) portfolio demand, with no need for the central bank to try to modify the structure of those rates and prices.

The zero lower bound on the policy rate has led central banks to intervene in many markets and affect many rates. The question is whether they should continue to do so if and when the bound is no longer binding. I believe that there is more scepticism today than was the case a decade or two ago about the proposition that market spreads should be taken as given, and that intervention by the central bank to affect those spreads should be seen as an undesirable distortion. Financial markets are like other markets. Many distortions are at work, and the spreads should not be considered sacred. If some rates react little to changes in the policy rate, there may be a good argument for intervening directly in the markets in which these rates are determined to achieve a larger adjustment.

One objection to this broader approach is that spreads reflect, at least in part, risk. Thus, the purchase of some of these assets implies some risk taking by the central bank. This is however no reason to forbid it. The central bank can take on risk and make losses, without it being an economic issue. And, if we think of the central bank as part of the consolidated government, the state is often in a better position to take on risk than the private sector. Thus, in many cases, a transfer of risk from the private to the public sector may be justified and desirable.

Other objections rely on political economy arguments. The first is that, while there is nothing economically wrong with a central bank making losses, or even having negative net worth, it may well weaken the position of the central bank vis a vis the central government, and put the independence of the central bank at risk.

The second is that there is a risk that the central bank favours, or is perceived as favouring, one set of asset holders over others. There may indeed again be political pressure to do just that.

The solution may be twofold. First, to limit interventions to various maturities along the sovereign yield curve (thus, narrowing the set of interventions relative to what central banks do today). If, for example, rates on private securities or credit rates by banks respond more to the 10-year rate on sovereign bonds than to the policy rate, intervening in the 10-year maturity bond market may get close to the results a broader intervention would have achieved. Or to take a more exotic case, the purchase of stocks in order to decrease the equity premium (something the Hong Kong authorities did in 1998) can be limited, to avoid the appearance of favouritism, to buying the market portfolio. Second, to the extent that the decision is made to help a particular sector, this may be better achieved through targeted subsidies from the central government, leaving the central bank out of the process.

ON EXCEPTIONAL MARKET INTERVENTIONS

Major market disruptions, the disappearance of investors in a given market for reasons unrelated to fundamentals in that market (for example, the need for liquidity elsewhere), or multiple equilibria where investors sell because they expect others to do the same, are a standard feature of financial markets in emerging market economies. But, both at the start of the Global Financial Crisis and at the start of the Covid crisis, we saw similar disruptions in advanced economies.

The traditional approach in such episodes was the generous provision of liquidity to a limited set of institutions against good collateral, following the Bagehot principles. Increasingly, central banks have provided liquidity to a larger number of financial players, and sometimes intervened directly in markets. Both evolutions make good sense; there is no obvious reason to go back.

I want to raise, however, an issue and a puzzle about central bank intervention in the sovereign bond market. By playing the role of a large stable investor which will not sell just because other investors sell, the central bank can indeed reduce the likelihood of a sudden stop, of a bad equilibrium. But what if the increase in the spread reflects the perception of an increased risk of default on sovereign debt. In this case, the central bank purchases do not change the overall risk associated with the consolidated government. It changes the nature of the liabilities, from long-maturity bonds purchased by the central bank to either shorter, zero-maturity, interest-paying bank reserves or non-interest-paying money, depending on how the central bank finances its purchases.

Does this change in the composition of the liabilities, but not in the overall size of the liabilities, explain why intervention works as well in this case? In the case of finance by interest-paying bank reserves, and on the assumption that there will be no default on bank reserves, this implies an increase in the riskiness of the rest of the debt in the hands of private investors, and thus a higher risk premium on that debt.⁶ In the case of finance by non-interest paying money, it implies a higher risk of inflation as opposed to straight default, and thus presumably an increase in long nominal rates. So why does intervention work, if it does, in this case? ⁷ I genuinely do not know.

⁶ This is a straightforward Modigliani-Miller argument applied to public debt.

⁷ The case of purchases of sovereign bonds by the ECB is different. To the extent that the liabilities of a specific government are reduced, and the liabilities of all members (bank reserves) are increased (for that part of the risk which is assumed by the ECB rather than by national central banks), intervention potentially leads to distribution effects across countries and can improve the liability position of a specific government. Whether this happens depends on the deviation of the distribution of ECB purchases to the capital key.

ON THE ARTICULATION BETWEEN MONETARY AND FISCAL POLICY

This last part is even more tentative than the rest. I want to raise three issues.

So long as the zero lower bound is a binding constraint, there is a clear role for fiscal policy in closing the output gap, and thus allowing the central bank to achieve its inflation goal. The reason why many central banks have missed their target inflation is not that they did not try, but that they did not have enough fiscal support. The more challenging question arises if and when economies get out of the zero lower bound, but not out of secular stagnation.⁸ In this case, by assumption, monetary policy can set the policy rate equal to the neutral rate and eliminate the output gap on its own. Still, the optimal macroeconomic mix is to rely partly on fiscal policy. The reason is that a neutral rate lower than the growth rate is a signal that the economy is suffering from excess saving, and that, in that context, more expansionary fiscal policy, and by implication a higher neutral rate, is desirable. (In that sense, the Biden stimulus plan, even if it goes too far, goes in the right direction). The optimal monetary-fiscal mix in that context should be high on the research agenda.

Another issue of coordination arises with respect to maturity management of the debt of the consolidated government. Since hitting the zero lower bound, central banks have purchased long-maturity sovereign bonds in exchange for zero-maturity interest-paying central bank reserves. As a result, they have reduced the maturity of consolidated government debt (the sum of central government and central bank liabilities). At the same time, treasuries, in order to protect themselves from future increases in interest rates, have issued longer-maturity bonds, and by doing so have increased the maturity of consolidated government debt. This raises the issue of what the net effect of the two have been. They have largely offset each other in terms of the average maturity of consolidated government debt. But the composition is different, as bank reserves are not runnable and now compose a larger proportion of the consolidated government liabilities. And if in the future, central banks continue to operate along the yield curve, it suggests the need for coordination between monetary and fiscal policy in the determination of the overall maturity and nature of consolidated government debt, something that has so far not been the case.⁹

Finally, and returning to an issue raised earlier, some have raised the issue of whether central banks should care about and deal with issues ranging from global warming, to the welfare of various disadvantaged groups, to inequality more broadly. I do not think that, beyond taking into account global warming-induced risks in financial regulation and

8 I define secular stagnation as the condition that the safe real rate is less than the growth rate. The zero lower bound binds when the safe nominal rate is equal to zero, or equivalently when the safe real rate cannot be less than minus the rate of inflation. So, for example, if the growth rate is 2% and inflation is also 2%, secular stagnation holds when the real rate is less than 2%, and the zero lower bound becomes binding when the neutral real rate is less than minus 2%.

9 There is a more benign interpretation of what has happened, i.e. that there was implicit coordination, that the Treasuries issued more long maturity debt, and the central banks then acted to avoid the increase in rates. I am sceptical that this describes the actual behaviour of the two players.

supervision, they can make any material difference to the first. For reasons given above, I am sceptical about the proposal to buy green bonds in preference to other bonds with the same degree of risk. As to the second, I have indicated the limits of caring about, say, the unemployment rates of specific groups. The case for caring about inequality and acting on it is, however, more complex. It is a fact that, fundamentally, monetary policy acts by moving interest rates, and by implication, asset prices. An expansionary monetary policy increases activity and decreases unemployment, which is good for all, but it also increases financial wealth, which profits disproportionately higher wealth individuals. This has been particularly salient during the Covid crisis, when stock markets have soared while many remained unemployed. This raises the issue of whether fiscal policy might not, in this respect, be a better tool to reduce output gaps. Like monetary policy, expansionary fiscal policy decreases unemployment and increases income, but in contrast to monetary policy, it raises interest rates and thus leads to smaller increases in asset prices, smaller wealth effects. It also can do a much better job of targeting those for whom it increases income, in order to increase overall demand and output.

I have focused on a scenario in which the zero lower bound is no longer relevant for the conduct of policy. This may be far in the future, but I think it essential to start thinking about as an end goal. I have raised more questions than I have given answers. I have left aside many topics, such as the allocation of tasks between monetary, fiscal, and macroprudential policies to achieve financial stability. And I have not discussed how central banks go from here to there, at what rate they phase out some programmes, and whether and how they decrease the very large central bank balance sheets. Thanks to two major crises, we have learned a lot about what monetary policy can do, but we have a lot more to explore in deciding what it should do in the future.

ABOUT THE AUTHOR

Olivier Blanchard is the Fred Bergsten Senior Fellow at the Peterson Institute and Robert Solow Professor of Economics Emeritus at MIT. He spent most of his career at MIT, but moved to Washington in 2008 to be the IMF's Chief Economist (Economic Counsellor and Director, Research Department), a post he retired from in 2015. His research interests are in macroeconomics, including a wide set of issues that range from the role of fiscal and monetary policy to the nature of speculative bubbles, to the nature of the labour market and the determinants of unemployment, to transition in former communist countries, to the global financial crisis. He is the author of many books and articles, including two textbooks in macroeconomics, one at the graduate level with Stanley Fischer and one at the undergraduate level. He is a past Chair of the MIT economics department, a Fellow and past Council Member of the Econometric Society, a past President of the American Economic Association, and a member of the American Academy of Sciences.

As Covid-19 spread in early 2020, many central banks were still struggling to boost inflation. The abruptness and speed of the economic deterioration, the sharp increase in market volatility, and the blinding uncertainty over the impact of the pandemic motivated a central bank reaction that was unprecedented in terms of size, speed and scope. This was not a standard recession, triggered by overheating or financial excesses; it was akin to an induced economic coma. In response, central banks quickly deployed a range of tools in a multidimensional strategy.

This book summarises the responses by sixteen central banks from both advanced and emerging economies – with chapters written by senior central bank officials and economists in each of the countries to explain the actions taken. This included many of the programmes first used in response to the Global Financial Crisis, combined with new initiatives to directly support financial markets and provide credit to the economy. Many of these new programmes went beyond the inflation-targeting focus of most central banks.

The book also includes chapters discussing the lessons learned and unresolved questions raised by these unparalleled actions. While responses varied across countries, there are several common threads: the size, speed and breadth of the responses; the reliance on a more multidimensional set of tools; and the ability of emerging markets to behave more like advanced economies. These extraordinary actions raise a number of important questions for the future of monetary policy and central banks more broadly – whether existing tools are sufficient, whether large balance sheets and moral hazard are a concern, whether recent regulatory adjustments need to be recalibrated, and whether central banks should take on more responsibilities. The recovery from the pandemic will also have unique features, and central banks will need to continue to be flexible and nimble to respond successfully.

ISBN: 978-1-912179-44-2

ISBN 978-1-912179-44-2



9 781912 179442 >

33 Great Sutton Street | LONDON EC1V 0DX | UK

TEL: +44 (0)20 7183 8801 | FAX: +44 (0)20 7183 8820

EMAIL: CEPR@CEPR.ORG

WWW.CEPR.ORG