



No 44

Covid-19 and bank resilience: where do we stand?

Yuuki Ikeda, Will Kerry, Ulf Lewrick and Christian Schmieder

22 July 2021

BIS Bulletins are written by staff members of the Bank for International Settlements, and from time to time by other economists, and are published by the Bank. The papers are on subjects of topical interest and are technical in character. The views expressed here are those of their authors and not necessarily the views of the BIS, the Bank of Japan or the Financial Stability Board. Yuuki Ikeda conducted the research on this Bulletin while working for the Secretariat of the Financial Stability Board. The authors thank Claudio Borio, Cathérine Casanova, Stijn Claessens, Rodrigo Coelho, Dietrich Domanski, Marc Farag, Bryan Hardy, Olivier Prato, Fernando Restoy, José Maria Serena, Előd Takáts, and Nikola Tarashev for valuable feedback, Hyun Song Shin for editorial guidance, Alessandro Barbera for research assistance, and Nicola Faessler and Louisa Wagner for administrative support.

The editor of the BIS Bulletin series is Hyun Song Shin.

This publication is available on the BIS website (www.bis.org).

© *Bank for International Settlements 2021. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

ISSN: 2708-0420 (online)

ISBN 978-92-9259-498-5 (online)

Yuuki Ikeda
yuuki.ikeda@boj.or.jp

Will Kerry
Will.Kerry@fsb.org

Ulf Lewrick
Ulf.Lewrick@bis.org

Christian Schmieder
Christian.Schmieder@bis.org

Covid-19 and bank resilience: where do we stand?

Key takeaways

- *A forward-looking view on bank resilience can be obtained through a combination of regulatory capital ratios, market valuations and insights from stress tests.*
- *Banks appear to have avoided the losses that once seemed likely given the severity of the pandemic shock, due in large part to policy support.*
- *While market valuations have largely recovered to pre-pandemic levels, a weaker tail of banks continues to struggle with anaemic profitability and potential for credit losses. The resilience of these banks could be tested if credit losses materialise following the winding down of policy support.*

The Covid-19 pandemic has been an unusual crisis for the banking system. Despite an unprecedented stop in global economic activity, bank losses have been modest even as lending has remained strong. This Bulletin compares the phases of the Covid-19 crisis with the Great Financial Crisis (GFC) and assesses the resilience of the largest banks in the world through the concept of a market-adjusted risk-weighted capital ratio (MARC), as well as through the outcome of stress tests.

The MARC combines information from regulatory book value metrics with market valuation measures to provide a composite view on bank resilience, similar to the measures suggested by Adrian and Shin (2014) and Haldane (2011). While regulatory metrics based on book values are robust to short-term market volatility that often dominates market-based metrics, market valuations often exhibit superior signalling properties, as seen for banks that failed in the GFC and in the euro area crisis (eg Kerry (2019)). We show that the MARC, by combining both types of metrics, yields insights into bank resilience that are complementary to traditional metrics. Moreover, we find that the MARC captures relevant information from stress tests, thus providing a useful addition to the broader set of available measures to monitor bank resilience and the strength of the financial system.

The MARC is defined as the smaller of the regulatory Common Equity Tier 1 (CET1) capital ratio and the CET1 ratio multiplied by the price-to-book ratio. The MARC is thus identical to the traditional CET1 measure when bank equity valuation is high, but discounts the CET1 ratio when the price-to-book ratio is below 1, taking into account market participants' views of the banks' franchise value and resilience (Kerry (2019)). By not adjusting CET1 capital if the price-to-book ratio is above one, the MARC guards against an overly optimistic assessment of bank resilience when investor confidence is strong and risks are being accumulated by banks.

The MARC also captures the idea that profitability is an important dimension of bank resilience. Weak profitability means that banks have lower cash flows to absorb shocks and pay both bondholders and depositors. Subdued profitability also slows the accumulation of capital through retained earnings. Low valuations can also incentivise banks to pay out a higher proportion of their income to shareholders (Gambacorta et al (2020)).

Our analysis suggests that investors remain confident in the resilience of banks in general. An assessment of 360 of the largest 500 institutions from 50 jurisdictions shows that market valuations have broadly recovered from the troughs observed at the onset of the pandemic. Bank resilience has been

buttressed by the capital and liquidity buffers raised after the GFC (BCBS (2021)). Projecting bank capitalisation in a stress scenario leads to a similar conclusion. That said, the MARC points to a “weaker tail” of banks with anaemic profitability and non-performing loans (NPLs) that mostly predate the pandemic. These banks, mainly from Asia and Europe, appear particularly exposed to potential setbacks in economic growth and an associated increase of credit losses once crisis-related policy support and prudential relief are phased out.

Covid-19: an unusual crisis

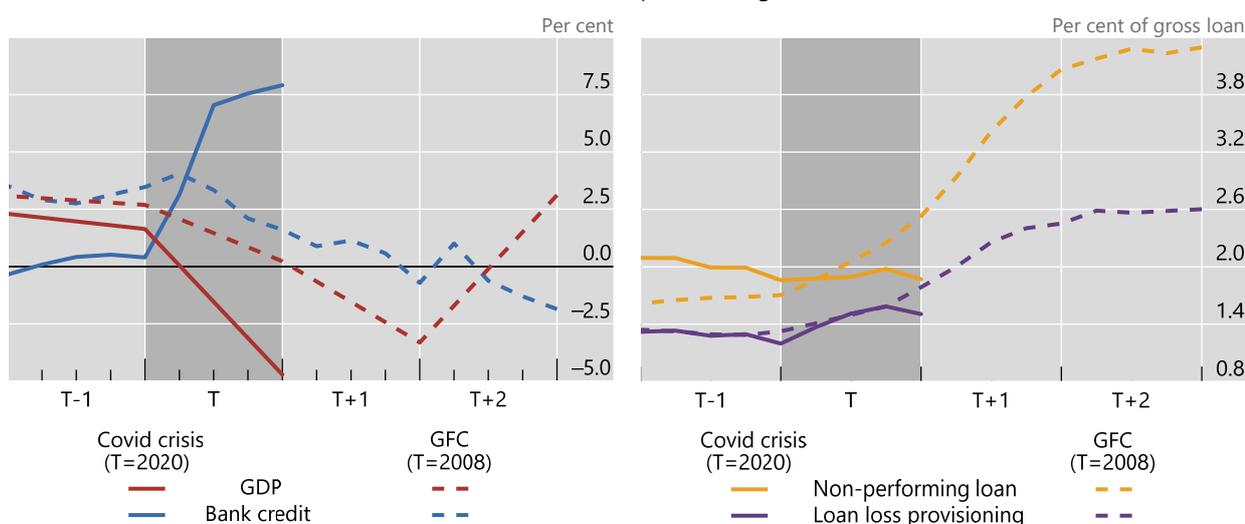
The Covid-19 crisis challenges traditional wisdom about how economic contractions impact banks. During the GFC, and other financial crises before it, a sharp downturn in the economy caused a rise in bankruptcies and unemployment, embroiling banks through losses on their loans. In the face of losses and rising credit risk, banks sought to protect their balance sheets by cutting back on lending and reducing leverage procyclically (eg Adrian and Shin (2010)). Yet, despite the sharp decline in economic activity at the onset of the pandemic, in this crisis banks not only avoided deleveraging but lending actually increased (Graph 1, left-hand panel). In fact, banks’ ability and willingness to provide credit, supported by public sector lending schemes and backstops, has been a distinguishing feature of the Covid-19 crisis (eg Borio (2020)).

Covid-19: an unusual crisis for credit losses and lending

Graph 1

GDP and bank credit in advanced economies^{1,3}

Advanced economy non-performing loans and provisioning^{2,3}



¹ Figures for bank credit are GDP-weighted averages of year-on-year growth rates across countries. Country coverage is AU, CA, DE, ES, FR, GB, IT, JP, KR, and US. ² Based on a sample of more than 3,000 banks from 22 advanced economies. ³ The shaded area indicates the year in which the growth rate of major advanced economies’ aggregate GDP turned negative during the GFC and Covid-19 crisis.

Sources: BIS credit statistics; IMF; FitchConnect; SNL Financial; authors’ calculations.

Indicators of the quality of banks’ loan portfolios depict an equally unfamiliar picture. In the GFC, banks in advanced economies faced a sharp rise in NPLs, prompting an increase in provisions. In the Covid-19 crisis, NPL ratios have remained low, not least owing to comprehensive policy support, which has contained corporate insolvencies as well as risks to banks, through loan guarantees (eg Borio and Restoy (2020)). While banks did increase provisions, the increase was smaller than in the GFC even as the adoption of the new expected credit loss provisioning scheme should, all things being equal, have raised provisions (Graph 1, right-hand panel). Indeed, some of the provisioning has subsequently been reversed (eg Araujo et al (2021)), reflecting a sanguine view on how credit losses will evolve.

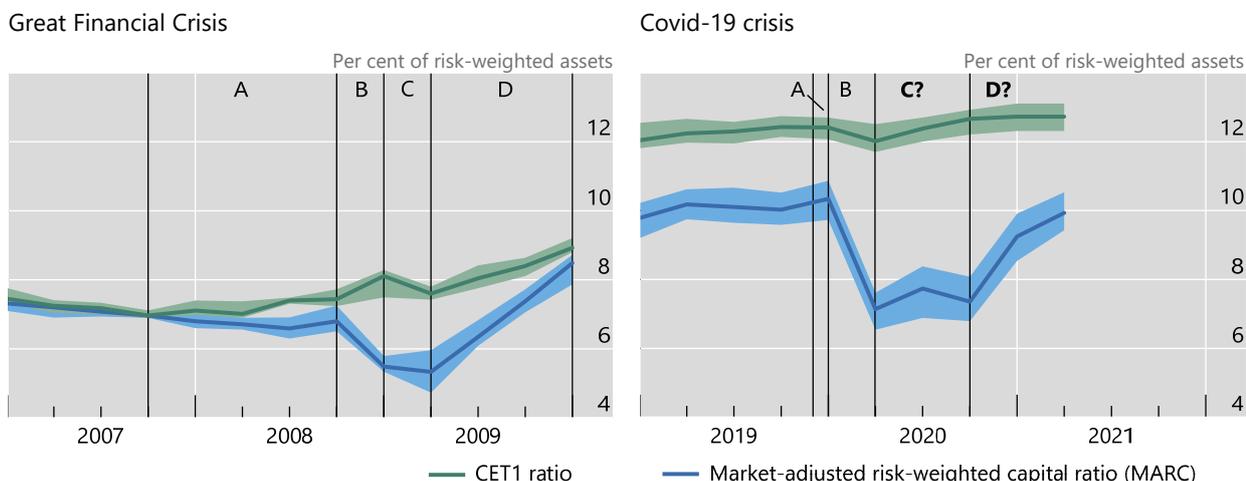
A comparison of the MARC with banks' regulatory capital ("book") ratio points to *four key phases* of the GFC (Graph 2, left-hand panel). These can serve as a benchmark for developments during the pandemic (right-hand panel). Following an initial shock (phase A), which occurred around the time when difficulties in valuing sub-prime assets were revealed in late 2007, the MARC started to fall while book ratios remained largely unaffected. The GFC then rapidly unfolded in a period of market turmoil after the collapse of Lehman Brothers (phase B). The MARC fell sharply, whereas book ratios rose as banks shed assets and deleveraged. A period of loss recognition then ensued (phase C) where the MARC stabilised – as the losses had been priced-in by markets – but the book value of capital was depleted. Eventually, the recovery set in (phase D) and both the MARC and book ratios rose.

In the Covid-19 crisis, the initial shock (phase A), defined here as the declaration of the pandemic by the World Health Organisation in March 2020, was closely followed by market turmoil (phase B). Bank valuations plummeted and the MARC fell sharply. However, unlike during the GFC, bank credit continued to flow and banks initially raised their provisions in light of new accounting rules, meaning that book ratios fell slightly. The subsequent recovery in both the MARC and book ratios suggest that banks may have now entered a recovery (phase D), skipping – at least for now – any major loss recognition (phase C). As such, it raises the question of whether banks will come out of this crisis largely unscathed or whether their resilience could be tested by a potential future wave of borrower insolvencies (eg Banerjee et al (2021)) once policy support is eventually wound down.

The evolution of the MARC points to another notable difference between the two crises. Many banks entered the Covid-19 crisis with depressed price-to-book ratios, as highlighted by the glaring gap between banks' MARC and their book ratios. Even though bank resilience benefited from notably higher capital and liquidity ratios than during the GFC, as well as more supportive funding conditions, the gap has persisted and raises questions about bank resilience.

Crisis phases and bank capital ratios¹

Graph 2



¹ The letters denote four phases of a crisis: (A) initial shock; (B) market turmoil; (C) loss recognition; and (D) recovery. Solid lines show medians, and ranges correspond to 45th–55th percentiles. Assets of US banks have been adjusted for derivatives netting. For periods where CET1 capital is not available, changes in the CET1 capital are proxied by changes in common equity. For the MARC, CET1 capital is multiplied by the bank's price-to-book ratio if the ratio is below unity (see Kerry (2019) and main text). Based on a sample of 360 banks among the top 500 global banks by total assets for which data to calculate the MARC were available.

Sources: Bloomberg; FitchConnect; Refinitiv Eikon; authors' calculations.

How resilient are banks?

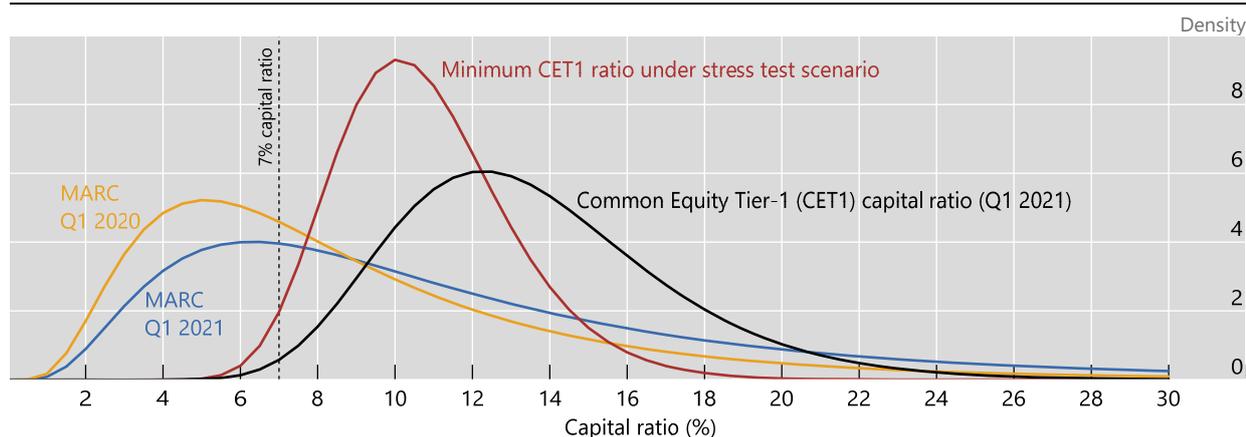
Aggregate developments provide an initial assessment of the sector, but the cross-sectional analysis of the MARC yields a more comprehensive picture. Graph 3 depicts the distribution of the MARC across banks during the trough of the Covid-19 crisis (end-Q1 2020, yellow line) and for the most recent observations (end-Q1 2021, blue line). Clearly, the MARC has recovered since the onset of the pandemic. Even so, a substantial number of banks – representing 30% of banks compared with 45% in Q1 2020 – have remained in the weaker tail of the distribution, with a MARC below 7%. This threshold provides an illustrative yardstick, notwithstanding the differences in definitions across metrics, since banks for which the CET1 capital ratio drops below 7% become subject to restrictions on distributions. The choice of the threshold will depend on the objective of the analysis.

We complement the market-based analysis by assessing resilience through a stress scenario (Lewrick et al (2020)). Using the framework of Hardy and Schmieler (2013), we project banks' CET1 capital ratios based on end-2020 balance sheet metrics through 2023. The projection assumes that key bank metrics respond to a decline in GDP in the same manner as observed during past crises. The severe GDP contractions in 2020 thus result in financial losses for banks materialising in 2021 and 2022, respectively. In addition, pre-provision income declines and the regulatory risk weights of assets rise, further pushing down capital ratios. As such, the stress test projects how the capital ratios could have evolved without the unprecedented amounts of public sector support during the Covid-19 crisis. In this sense, the test provides a conservative estimate of the potential impact of withdrawing public sector support on bank balance sheets.

The stress analysis suggests that most banks would maintain a fairly high CET1 capital ratio even under adverse macroeconomic conditions (Graph 3). We plot the distribution of the minimum CET1 capital ratio for each bank over the stress horizon (2021–23). Starting from the distribution of CET1 capital ratios in Q1 2021 (black line), losses in the stress test push the distribution to the left (red line). Yet, thanks to a stronger starting position relative to the GFC (see also Graph 2), only very few banks in the stress test exhibit a decline in their capital ratio below 7%.

Adjusting capital ratios by market valuations points to a weaker tail of banks¹

Graph 3



¹ The graph plots lognormal distributions fitted to empirical distributions of capital ratios for a sample of 360 of the largest 500 banks globally, by assets. The dashed vertical line indicates a 7% capital ratio (the sum of the Basel III minimum requirement and the Capital Conservation Buffer).

Sources: IMF; Bloomberg; FitchConnect; Refinitiv Eikon; authors' calculations.

Banks' performance in the stress tests and the MARC provide a fairly consistent assessment of the weaker tail of banks. Banks with a low MARC experience a notably larger decline in their CET1 capital ratio in the stress scenario (Graph 4, first panel). At the current juncture, the assessment also tallies with Expected Default Frequency (EDF) analysis that estimates default probabilities using equity market

volatility. Banks with comparatively high EDFs are clustered not only at the lower end of the distribution in terms of their MARC, but also in terms of their minimum CET1 capital ratio over the stress test horizon (second panel), indicating that the MARC delivers complementary but related insights on bank resilience.

Banks in the weaker tail face a number of challenges, such as lacklustre profitability and low return-on-assets weighing on market valuations. In Q4 2020, the return-on-assets of banks in the weaker tail amounted to 0.3% on average, only a third of the 0.9% average reported by their peers. Moreover, some banks in the weaker tail have more risky funding profiles, opting for greater reliance on short-term funding at the expense of long-term funding and deposits.

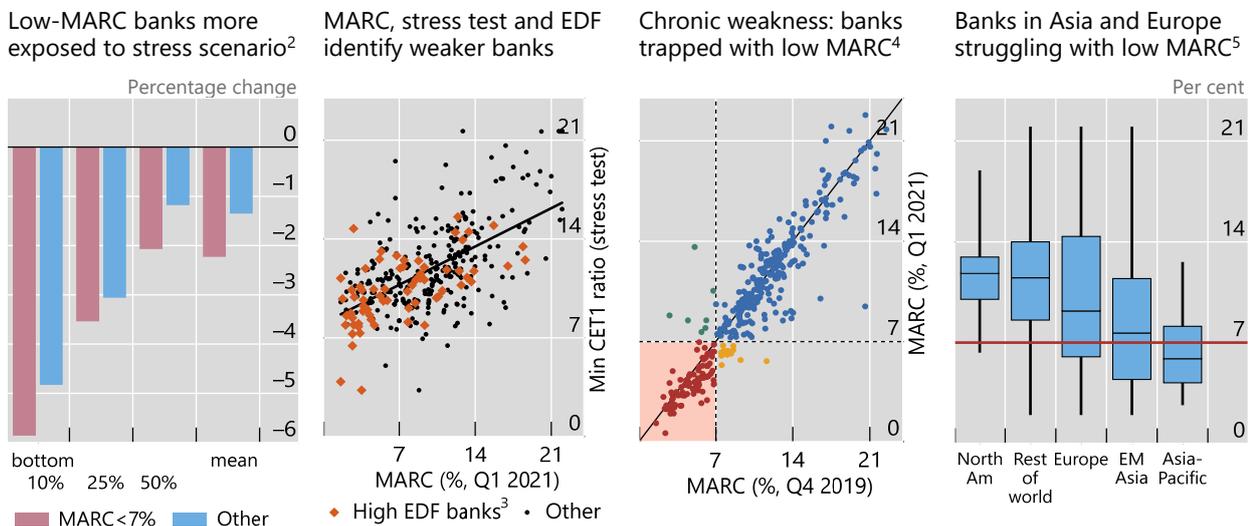
The credit quality of these banks is also lower, with the weaker tail reporting average NPL ratios of 4.1% at end-2020, nearly twice the 2.4% level of their peers. Credit quality appears particularly low for exposures to small and medium-sized enterprises, with notable shares of loans subject to forbearance measures in some jurisdictions. Looking ahead, unwinding policy support and prudential relief could put further pressure on credit quality as forborne loans become non-performing.

Many of these factors pre-date the Covid-19 crisis, as reflected in the fact that banks already positioned in the weaker tail before the pandemic remain in the weaker tail at the current juncture (Graph 4, third panel). This finding suggests that the focus should be on weaknesses in these banks' business models that have been accentuated, but not caused, by the crisis.

Vulnerabilities are not confined to individual jurisdictions or regions. For instance, low market valuations continue to weigh on the MARC of major banks in Asia and Europe (Graph 4, fourth panel). In many cases, they have largely undone the uplift in the MARC resulting from improved regulatory capital ratios. Over the past five years, the erosion in banks' market valuations reduced the MARC by about 2.5 percentage points on average for the banks in these regions.

Banks in the weaker tail: a confluence of factors¹

Graph 4



¹ Based on a sample of more than 300 major banks from 50 jurisdictions. ² The chart plots the projected change in the banks' end-2020 CET1 capital ratio in a stress test scenario over a three-year horizon. Results for banks with market-adjusted risk-weighted capital ratio (MARC) below 7% at end-2020 (94 banks) are depicted in red. ³ Banks with Expected Default Frequency (EDF) above the sample's 75th percentile. ⁴ The red dots indicate banks with a MARC below 7% at end-2019 (pre-pandemic) and in Q1 2021. The yellow dots represent banks for which the MARC has fallen below 7% in Q1 2021, while the green dots are banks which have recently risen above 7%. Blue dots represent all other banks. ⁵ MARC as of Q1 2021, by region, winsorised at the 1% and 99% percentiles. The blue boxes (poles) represent the interquartile (minimum to maximum) range; the black horizontal bars depict the unweighted regional average. The red horizontal line indicates a MARC of 7%.

Sources: IMF; Bloomberg; FitchConnect; Refinitiv Eikon; authors' calculations.

Implications and policy considerations

The global banking system has so far proven resilient. Most banks entered the Covid-19 crisis with much higher levels of regulatory capital than during the GFC, allowing banks – supported by the public sector – to sustain lending despite the sudden stop in economic activity. However, the outlook for banks trapped in the weaker tail remains challenging, and their fortunes will depend crucially on the impact of the withdrawal of policy support on their borrowers. In a downside scenario, there is a risk of chronically weak banks being tied to chronically weak borrowers (“zombie firms”). As economies recover from the crisis, efforts to address pre-existing structural vulnerabilities in the banking sector need to be reinvigorated.

Against this backdrop, policymakers face the challenge of phasing out policy support without jeopardising the recovery. Flexible, state-contingent approaches to adjusting or withdrawing support are needed (Boissay et al (2020), FSB (2021)). This calls for targeted measures that require beneficiaries to opt-in, while making the terms of support progressively less generous. Supervisory authorities will need to balance a supportive macroprudential stance with timely recognition of bank losses to encourage balance sheet repair and support the monitoring of bank resilience (Restoy (2021)).

References

- Adrian, T and H S Shin (2010): “Liquidity and leverage”, *Journal of Financial Intermediation*, vol 19, no 3.
- (2014): “Procyclical leverage and value-at-risk”, *Review of Financial Studies*, vol 27, no 2.
- Araujo, D, B Cohen and P Pogliani (2021): “Bank loan loss provisioning during the Covid crisis”, *BIS Quarterly Review*, March.
- Banerjee, R, J Noss and J Vidal Pastor (2021): “Liquidity to solvency: transition cancelled or postponed?”, *BIS Bulletin*, no 40.
- Basel Committee on Banking Supervision (2021): *Early lessons from the Covid-19 pandemic on the Basel reforms*, July.
- Boissay, F, S Claessens and A Villegas (2020): “Tools for managing banking distress: historical experience and lessons for today”, *BIS Quarterly Review*, December.
- Borio, C (2020): “The prudential response to the Covid-19 crisis”, speech on the occasion of the BIS’s Annual General Meeting, 30 June.
- Borio, C and F Restoy (2020): “Reflections on regulatory responses to the Covid-19 pandemic”, *FSI Briefs*, no 1.
- Gambacorta, L, T Oliviero and H S Shin (2020): “Low price-to-book ratios and bank dividend payout policies”, *BIS Working Paper*, no 907, December.
- Haldane, A (2011): “Capital discipline”, remarks based on a speech given at the American Economic Association, 9 January.
- Hardy, D and C Schmieder (2013): “Rules of thumb for bank solvency stress testing”, *IMF Working Paper* no 13/232.
- Financial Stability Board (2021): *Covid-19 support measures: extending, amending and ending*, April.
- Kerry, W (2019): “Finding the bad apples in the barrel: using the market value of equity to signal banking sector vulnerabilities”, *IMF Working Paper*, no 19/180.
- 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.
- Restoy, F (2021): “Prudential policy after the pandemic”, speech at the 33rd Annual Conference of the Group of Banking Supervisors from Central and Eastern Europe, 27 May.

Previous issues in this series

No 43 15 July 2021	Global reflation?	Flora Budianto, Giovanni Lombardo, Benoit Mojon and Daniel Rees
No 42 27 May 2021	Whom do consumers trust with their data? US survey evidence	Olivier Armantier, Sebastian Doerr, Jon Frost, Andreas Fuster and Kelly Shue
No 41 12 April 2021	Futures-based commodity ETFs when storage is constrained	Sirio Aramonte and Karamfil Todorov
No 40 25 March 2021	Liquidity to solvency: transition cancelled or postponed?	Ryan Banerjee, Joseph Noss and Jose Maria Vidal Pastor
No 39 17 March 2021	Liquidity management and asset sales by bond funds in the face of investor redemptions in March 2020	Andreas Schrimpf, Ilhyock Shim and Hyun Song Shin
No 38 10 March 2021	Covid-19 bank dividend payout restrictions: effects and trade-offs	Bryan Hardy
No 37 14 January 2021	Covid-19 and cyber risk in the financial sector	Iñaki Aldasoro, Jon Frost, Leonardo Gambacorta and David Whyte
No 36 12 January 2021	E-commerce in the pandemic and beyond	Viviana Alfonso, Codruta Boar, Jon Frost, Leonardo Gambacorta and Jing Liu
No 35 15 December 2020	The recession-mortality nexus and Covid-19	Sebastian Doerr and Boris Hofmann
No 34 14 December 2020	Central bank swap lines and cross-border bank flows	Iñaki Aldasoro, Christian Cabanilla, Piti Disyatat, Torsten Ehlers, Patrick McGuire and Goetz von Peter
No 33 02 December 2020	What comes next? Recovery from an uneven recession	Daniel Rees
No 32 12 November 2020	Monetary policy response in emerging market economies: why was it different this time?	Ana Aguilar and Carlos Cantú
No 31 09 October 2020	Bankruptcies, unemployment and reallocation from Covid-19	Ryan Banerjee, Enisse Kharroubi and Ulf Lewrick
No 30 09 October 2020	The outlook for business bankruptcies	Ryan Banerjee, Giulio Cornelli and Egon Zakrajšek

All issues are available on our website www.bis.org.