FSB FINANCIAL STABILITY BOARD

Lessons Learnt from the COVID-19 Pandemic from a Financial Stability Perspective

Interim report

13 July 2021

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Executive Summary

The COVID-19 pandemic is the first major test of the global financial system since the G20 reforms were put in place following the financial crisis of 2008. While significantly different in nature from the 2008 crisis, this real-life test may hold important lessons for financial policy, including the functioning of the G20 reforms. Any analysis at this stage needs to bear in mind that the pandemic is not yet over and that its economic and financial impact has been greatly mitigated by bold policy actions. The objective of this report, which has been prepared in collaboration with standard-setting bodies (SSBs), is therefore to identify preliminary lessons for financial stability from the COVID-19 experience and aspects related to the functioning of the G20 financial regulatory reforms that may warrant further attention at the international level.

Thus far the global financial system has weathered the pandemic thanks to greater resilience, supported by the G20 reforms, and the swift, determined and bold international policy response. Effective implementation of those reforms meant that core parts of the system entered the pandemic in a more resilient state than during the 2008 financial crisis. Large banks hold more capital, have more liquidity and are less leveraged, which allowed them to cushion, rather than amplify, the macroeconomic shock. Financial market infrastructures (FMIs), particularly central counterparties (CCPs), functioned as intended. However, the pandemic experience also highlighted differences in resilience within and across financial sectors. Key funding markets experienced acute stress in March 2020, forcing authorities to take decisive and unprecedented action to sustain the supply of financing to the real economy, provide economic assistance, alleviate US dollar funding shortages, and support market functioning.

The strong international standards the G20 put in place post-2008, and the flexibility built into those, supported an effective policy response during the initial phase of COVID-19. A wide set of monetary, fiscal, regulatory and supervisory measures cushioned the impact of the COVID-19 event on the financial system. Reflecting jurisdiction-specific circumstances and needs, authorities broadly used the flexibility within international standards to support financing to the real economy. In a few cases, individual temporary measures have gone beyond the available flexibility, in order to respond to extreme financial conditions and provide additional operational flexibility to financial institutions. Monitoring and coordination, guided by the FSB COVID-19 Principles, has discouraged actions that could distort the level playing field and lead to harmful market fragmentation.

The March 2020 market turmoil has underscored the need to strengthen resilience in the non-bank financial intermediation (NBFI) sector. The impact of the COVID-19 event has highlighted vulnerabilities in the sector stemming from liquidity mismatches, leverage and interconnectedness, which may have caused liquidity imbalances and propagated stress during the 'dash for cash'. The turmoil has also underlined the importance of interconnectedness within NBFI and with banks. The underlying structures and mechanisms that exposed the financial system to these strains are still in place. The FSB has developed a comprehensive work programme to enhance the resilience of the NBFI sector while preserving its benefits. Continuing international cooperation and coordination of NBFI policy responses are important to prevent regulatory arbitrage and market fragmentation.

The functioning of capital and liquidity buffers may warrant further consideration. Banks generally did not need to use their capital and liquidity buffers to meet loan demand thus far.

They maintained strong capital positions during the pandemic, supported by public measures. However, some evidence suggests that banks may have been hesitant to dip into their buffers had it been needed, in spite of the flexibility embedded in the regulatory framework. Authorities released countercyclical capital buffers quickly, but were not always available or of sufficient scale to provide substantial additional macroprudential space. And while banks did not face large liquidity pressures overall, some took defensive actions to maintain their liquidity levels well above regulatory minima.

Some concerns about excessive financial system procyclicality remain. Margin calls in some derivatives markets during the peak of the March 2020 turmoil may have been larger than expected or insufficiently anticipated by market participants, adding to the overall demand for cash. The actions of certain investors may have contributed to the amplification of liquidity imbalances and their propagation through the financial system. Regulatory requirements do not appear to have been a dominant factor in determining dealer behaviour but they may have lowered banks' incentives to mitigate the imbalances that emerged in some markets. Moreover, while having declined since 2008, mechanistic use of credit rating agency ratings may persist in some specific areas. And further work may be needed to examine the potential procyclicality of loan loss provisioning arising from the new expected credit loss accounting framework. More generally, it may be too early to draw conclusions about financial system procyclicality as support measures may have dampened or delayed the impact of potential amplification mechanisms.

The pandemic highlights the importance of effective operational risk management arrangements being in place before a shock hits. Precautionary lockdown measures tested the contingency plans of all financial market participants. Financial institutions and FMIs successfully invoked business continuity plans and adopted work-from-home (WFH) arrangements at short notice. Notwithstanding new challenges, financial institutions have generally been able to continue operations in this mode for a much longer period than expected, ensuring that financial markets remained open and orderly, even with in some cases significantly increased trading volumes.

Authorities should continue to take steps to further enhance crisis management preparedness. Cross-border mechanisms established in recent years, such as supervisory colleges and crisis management groups, facilitated timely and effective information sharing and cooperation among authorities. Scenario-based stress tests helped authorities to adjust their policies, while recovery and resolution planning have improved firms' capabilities. Clear communication to the industry and the public has helped to support the effectiveness of policy measures. Authorities should continue exploring opportunities to enhance information sharing further and to continue to adapt supervisory and regulatory policies to the changing underlying circumstances, including by addressing identified data gaps and enhancing analytical tools. Efforts should continue to ensure credible liquidity and systemic crisis arrangements for times of stress and resolution.

Identifying systemic vulnerabilities early on remains a priority. The COVID-19 pandemic may yet test the resilience of the global financial system. The current low level of corporate insolvencies seems predicated on continued policy support. Banks and non-bank lenders could still face additional losses as these measures are unwound. Recent bank stress tests suggest that the largest banks are well capitalised and will remain resilient under a range of recovery scenarios. Yet there may be questions about how banks would maintain real economy financing

in an environment of deteriorating non-financial sector credit quality which makes harder to discriminate viable projects. Asynchronous economic cycles and widening interest rate differentials could induce disorderly capital outflows from emerging markets as dollar denominated investments are suddenly reallocated across jurisdictions.

One of the legacies of the pandemic may be a build-up of leverage and debt overhang in the non-financial sector. High corporate and, in some cases, sovereign indebtedness was already a concern before the outbreak of COVID-19. Rapid and large credit support has increased debt levels, especially in the hardest-hit sectors. Addressing debt overhang, including by facilitating the market exit of unviable companies, and by promoting the efficient reallocation of resources to viable firms, may be a key task for policymakers going forward.

The COVID-19 experience reinforces the importance of completing remaining elements of the G20 reform agenda. Those parts of the global financial system where implementation of post-crisis reforms is most advanced displayed resilience. The financial stability benefits of the full, timely and consistent implementation of the reforms, including with respect to Basel III, over-the-counter (OTC) derivatives, resolution frameworks and NBFI, remain as relevant as when they were agreed. It is also important to evaluate whether these reforms, once implemented, are effectively working as intended, including how macroprudential policy has functioned in practice.

COVID-19 has reinforced the need to promote resilience amidst rapid technological change in the economy and the global financial system. WFH arrangements propelled the adoption of new technologies and accelerated digitalisation in financial services. While outsourcing to third-party providers, such as cloud services, seems to have enhanced operational resilience at financial institutions, increased reliance on such services may give rise to new challenges and vulnerabilities. Effective management of such risks across the supply chain is essential to mitigating operational and cyber risk.

The final report in October will set out next steps. This interim report will be used to engage with external stakeholders on preliminary findings and issues raised from the analysis to date. The final report to the G20 Summit in October will reflect any further FSB/SSB work by then and takeaways from stakeholder engagement, and set out tentative lessons and next steps to address the identified issues.

1. Introduction

The COVID-19 pandemic is the first major test of the global financial system since the G20 financial reforms were put in place following the financial crisis of 2008. In contrast to the 2008 crisis, the shock originated outside of the financial system. The pandemic and government containment measures led to a sudden stop in real economic activity and placed the financial system under strain, culminating in a severe liquidity stress in March 2020. This was followed by unprecedented policy actions to contain the economic fallout and stabilise markets. Authorities have kept in place the large majority of support measures since then to support financial resilience and ensure a sustained flow of financing to the real economy, in response to heightened economic uncertainty and continued elevated risks to financial stability.

The global financial system weathered the pandemic thus far thanks to the greater resilience provided by the G20 reforms and a swift, determined and bold international policy response. Banks and FMIs, particularly CCPs, held up well and were largely able to absorb rather than amplify the shock. Nevertheless, key funding markets experienced acute stress in March 2020, 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.

While significantly different in nature from the financial crisis of 2008, this real-life test holds important lessons for financial policy, including the functioning of G20 reforms. The objective of this report, which has been prepared in collaboration with SSBs, is to identify preliminary lessons for financial stability from the COVID-19 experience and aspects related to the functioning of the G20 financial regulatory reforms that may warrant further consideration at the international level.

The report is organised around key questions that have arisen in main areas of relevance for global financial stability. The following section discusses market and institutional resilience, including the factors that give rise to pro-cyclical behaviour in the financial system. Section 3 focuses on operational resilience, which was tested in particular through the abrupt and forced shift to remote working arrangements. Section 4 discusses issues related to crisis preparedness. The final section brings together the main findings and looks ahead.

Any lessons to be drawn from the pandemic at this stage are preliminary in nature. The pandemic continues to unfold and its full effects on the global economy and financial system have not yet emerged. Moreover, it is difficult to disentangle the effects of the G20 reforms from the extensive and wide-ranging monetary, regulatory and fiscal support measures by authorities, not least because most support measures remain in place.

2. Market and institutional resilience

The COVID-19 shock hit a global financial system that has fundamentally changed over the past decade. A number of factors – including regulatory reforms and market-driven adjustments in the aftermath of the 2008 financial crisis, technological changes, and the growth of NBFI – have affected the structure and functioning of the financial system. From a financial stability perspective, three questions stand out. The first is whether post crisis-reforms have had the intended effects on financial resilience. A second question is whether the global regulatory

framework provided for the needed flexibility to respond to the COVID-19 shock. Finally, there is a question as to whether the financial system is behaving in a less pro-cyclical manner, as a result of efforts to strengthen the macroprudential orientation of regulation and supervision that formed part of the post-crisis reforms.

Have the post-crisis reforms provided the intended level of resilience for the financial system? What have been the main challenges to date?

Core parts of the global financial system entered the pandemic in a more resilient state than during the financial crisis of 2008. Large banks hold more capital, have more liquidity and are less leveraged, which allowed them to absorb rather than amplify the macroeconomic shock as occurred in 2008. OTC derivatives reforms have 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, supported by robust risk management requirements. And aspects of structured finance that contributed to the 2008 financial crisis – such as structured investment vehicles and collateralised debt obligations of subprime credits – have significantly declined.

However, the pandemic experience also highlighted differences in resilience within and across financial sectors. While core parts of the financial system have been able to withstand and absorb the COVID-19 shock thus far, key funding markets experienced acute stress in March 2020. Even though some degree of financial stress was to be expected going into the pandemic, its breadth and depth turned out to be unprecedented. As in previous stress periods, the shock caused a sharp repricing of risk and a heightened demand for safe assets. In its more acute phase, the stress led to an extremely high demand for cash and near-cash assets – a 'dash for cash' – creating large imbalances in the demand for, and supply of, liquidity needed to facilitate intermediation.

A wide set of monetary, fiscal, regulatory and supervisory measures cushioned the impact of the COVID-19 event on the financial system. While this in part reflects the extraordinary magnitude of the external shock, it was also a response to specific problems experienced in some parts of the financial system. Central banks took unprecedented action on a scale, and at a speed, that exceeded that during the 2008 financial crisis. Central bank assets expanded much more than in 2008, reflecting the provision of support in different forms and through different channels. Regulatory and supervisory measures encouraged banks to use available buffers to support lending, and to free up resources and alleviate operational burdens.[1] Securities regulators also took measures to support market functioning. Fiscal authorities provided significant support to companies and households to shield them from the effects of the pandemic and to maintain credit supply. The degree of government support in emerging market economies (EMEs) has overall been markedly lower than in advanced economies, and the policy mix somewhat different, reflecting the specific challenges and constraints that many EMEs face.[2]

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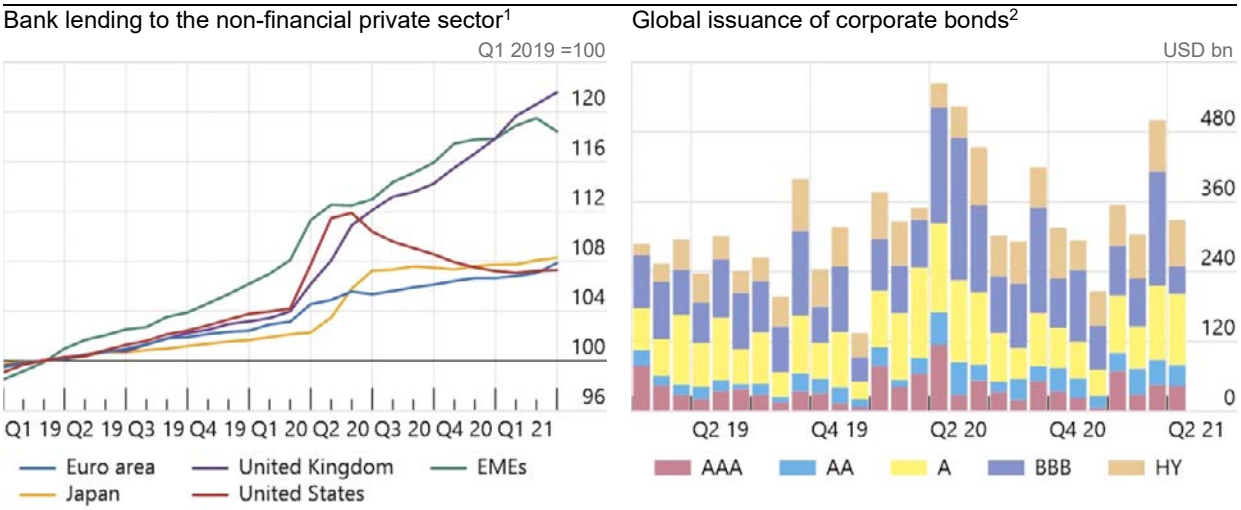
1 These measures included the release of the countercyclical capital buffer and of other systemic risk buffers; encouragement to use capital and liquidity buffers; restrictions on dividends, share buybacks and bonuses; asset classification guidance; flexibility in the application of prudential requirements; reduction of operational burden; and targeted supervisory activities. See the FSB report on the *COVID-19 pandemic: Financial stability implications and policy measures taken* (July 2020) for details.

2 See the FSB report on the *COVID-19 pandemic: Financial stability impact and policy responses* (November 2020).

As a result of greater overall resilience and determined policy interventions, financing to the real economy has generally remained available throughout the COVID-19 event. Notwithstanding a significant tightening of funding conditions during the March 2020 market turmoil and a challenging operational environment, banks have continued to lend (Graph 2.1). Indeed, BCBS analysis indicates that more strongly capitalised banks showed higher increases in lending to businesses and households than other banks. While capital markets experienced severe disruption during the peak of the March turmoil, policy interventions restored market functioning and facilitated the issuance of significant equity and debt financing to the real economy. Derivatives volumes also increased, enhancing the ability of market participants to transfer and hedge risks.

Financing has continued throughout the Covid-19 event **Graph 2.1**



[1] For EMEs, simple average for Brazil, Indonesia, Mexico, Russia, South Africa and Turkey. Series used for each jurisdiction (seasonally adjusted): For Brazil, loans from financial system to nonfinancial corporations and households (total credit outstanding); for European Monetary Union, money supply, loans to other Eurozone residents except government; for Indonesia, commercial and rural banks' claims on private sector (loans); for Mexico, commercial banks' credit to private sector; for Russia, bank lending, corporate and personal loans; for Turkey, bank lending to private sector; for the United Kingdom, monetary financial institutions' sterling net lending to private non-financial corporations and households; for the United States, commercial banks' loans and leases in bank credit. [2] Bloomberg composite rating.

Sources: Bank of England; Bank of Japan; European Central bank; Board of Governors of the Federal Reserve System; national sources; FSB calculations.

To an important extent, the banking sector's resilience can be attributed to the adoption of Basel III reforms. From 2013 to the end of 2019, banks' capital, leverage and liquidity positions improved as reforms were implemented.[3] Core equity tier 1 (CET1) capital ratios improved by nearly 3 percentage points on a weighted average basis for large internationally-active banks (left panel, Graph 2.2). Leverage ratios exhibited marked improvement since the introduction of the Basel III reforms, with weighted average leverage ratios for large internationally-active banks increasing by between 1-2 percentage points. Liquidity positions also improved materially, both qualitatively and quantitatively. Taken together, most banks entered the pandemic with capital and liquidity levels well above minimum regulatory levels.

Significant progress in addressing the too-big-to-fail problem also added to bank resilience.[4] Systemically important banks in advanced economies have built up significant loss absorbing

[3] The analysis of the impact of Basel reforms reflects data from 2013 onwards to discount the build-up of capital that took place during and immediately after the 2008 financial crisis.

[4] See the FSB *Evaluation of the effects of too-big-to-fail reforms: Final Report* (March 2021).

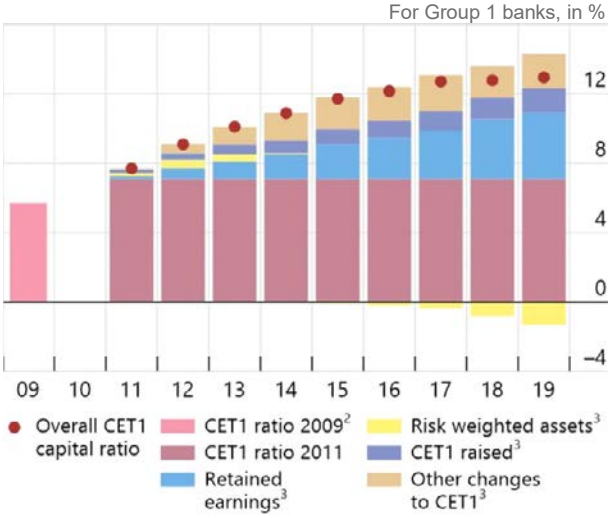
and recapitalisation capacity by issuing instruments that can bear losses in the event of resolution. These reforms have given authorities more options for dealing with banks in distress. Recovery and resolution planning have also improved the operational capabilities of banks and authorities, and supported risk management on a cross-border basis through enhanced liquidity monitoring and reporting.

FMIs, including CCPs, functioned as intended. The increased use of CCPs and bilateral margining for OTC derivatives products in recent years helped mitigate counterparty risks, unlike in 2008. This was the case despite challenging operational conditions and heightened market activity (including high asset price volatility) in the early stages of the pandemic. Initial margin played a key role in mitigating counterparty risk during the March 2020 market turmoil (right panel, Graph 2.2) – ensuring sufficient prefunded loss absorbing resources for the risks associated with derivatives and securities transactions.

Banks and CCPs remained resilient **Graph 2.2**

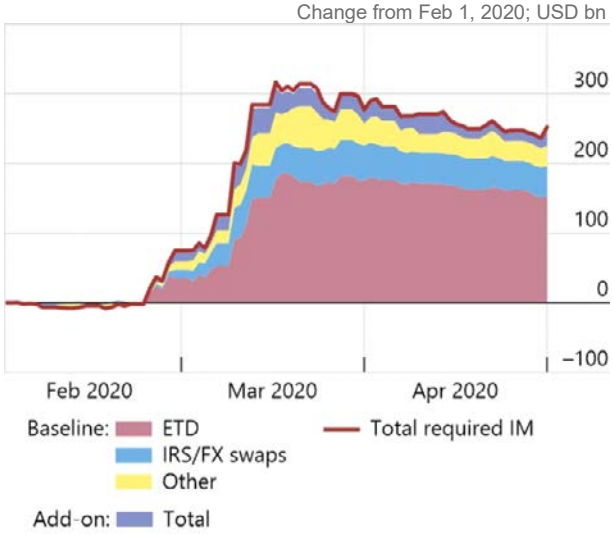
Basel III CET1 capital ratios and their drivers[1]

For Group 1 banks, in %



Initial margin (IM) during the March turmoil

Change from Feb 1, 2020; USD bn



ETD = exchange-traded derivatives; IRS = interest rate swaps; FX = foreign exchange.

[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.

Source: Basel III Monitoring Report (December 2020); CPMI-IOSCO.

The insurance sector also demonstrated resilience, aided by significant progress in the adoption of enhanced IAIS standards on group-wide supervision and macroprudential policy measures.[5] The sector entered the pandemic with generally healthy solvency levels. While not at the centre of the March 2020 turmoil, financial market volatility affected insurers' solvency and profitability, but their available capital resources generally remained well above requirements supported by capital management measures. The impact of COVID-19 on insurers' liabilities varied.

[5] In November 2019, the IAIS adopted a range of key reforms, including an enhanced set of Insurance Core Principles (ICPs); the Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame); and the Holistic Framework for the assessment and mitigation of systemic risk in the insurance sector (Holistic Framework). See the *Aggregate Report on the Results of the Holistic Framework Baseline Assessment* (June 2021).

Significantly higher claims in travel, event cancellation and pandemic/excess mortality insurance were partly offset by reduced claims in other areas due to reduced economic activity.[6]

The March 2020 market turmoil has underscored the need to strengthen resilience in the NBFI sector.[7] The impact of the COVID-19 event has highlighted vulnerabilities in particular activities and mechanisms in the sector stemming from liquidity mismatches, leverage and interconnectedness, which may have caused liquidity imbalances and propagated stress. They include: significant outflows from non-government money market funds (MMFs) and certain types of open-ended funds (OEFs); redistribution of liquidity from margin calls (see Box below, based on preliminary analysis by the CPMI and IOSCO); 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 has also highlighted the importance of interconnectedness within the NBFI sector and with banks.

Have authorities and financial institutions used the flexibility incorporated in international standards? Are there impediments to the use of capital and liquidity buffers?

Authorities broadly used the flexibility within international standards to support bank lending. The flexibility embedded in these standards (which are principles-based or have built-in options and buffers) is being used to respond decisively to the COVID-19 shock. Many authorities temporarily eased some capital and liquidity requirements, imposed dividend distribution restrictions, and – taking account of support measures and payment moratoria programmes – provided greater flexibility in the classification of exposures, including non-performing and forborne loans, and in the regulatory treatment of accounting expected credit losses (ECL). 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.

Monitoring and coordination, guided by the FSB COVID-19 Principles,[8] has discouraged actions that could distort the level playing field and lead to harmful market fragmentation. The policy response to COVID-19 has underlined policymakers' awareness of harmful effects of market fragmentation. The sharing of information by authorities through the FSB and SSBs has helped jurisdictions to respond quickly and consistently to the effects of COVID-19, while minimising the risk of market fragmentation.[9] The FSB COVID-19 Principles underpin the official community's response to the pandemic, and one of those principles is that authorities' actions will be consistent with maintaining common international standards and will not roll back regulatory reforms or compromise the underlying objectives of existing international standards. Overall, most prudential measures taken by member authorities in response to COVID-19 have been capital- or liquidity-related, with the primary objective to support banks' ability to continue lending to the real economy. The majority of these measures make use of the flexibility embedded in the Basel framework, or are otherwise temporary in nature. The FSB and the SSBs are continuing

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6 See the IAIS *2020 Global Insurance Market Report* (December 2020).

7 See the FSB *Holistic Review of the March Market Turmoil* (November 2020).

8 See the FSB report on the *COVID-19 pandemic: Financial stability implications and policy measures taken* (April 2020).

9 See the FSB report on *Market Fragmentation: Updates on ongoing work* (October 2020).

to monitor the use of flexibility and consistency of measures taken with international standards, to identify whether differences in policy responses may have fragmentary effects or give rise to cross-border or cross-sectoral spillovers that may warrant enhanced international cooperation and coordination.[10]

Authorities released countercyclical capital buffers (CCyB) quickly, but these were not always available or of sufficient scale to provide substantial additional macroprudential space. Some jurisdictions had set a positive CCyB in recent years and most released the buffer in response to the pandemic. In other cases, where a positive CCyB was not in place, authorities lowered other regulatory requirements or buffer levels. While it is difficult to assess the quantitative effect of these capital releases, there is some evidence that they had a positive effect on lending during the pandemic.[11] These findings suggest that it may be beneficial to consider whether there is sufficient releasable capital in place to address future systemic shocks.

Banks generally did not need to use their capital buffers to meet loan demand thus far. Such buffers, which sit above regulatory minimum requirements, are intended to be used in times of stress to absorb losses and to allow banks to continue to supply credit to the economy, which supports a faster recovery and lower subsequent losses. Overall, banks maintained their strong capital positions during the pandemic, as reflected in significant capital headroom (Graph 2.3). In part, this has been due to fiscal support to households and non-financial firms that helped to reduce loan losses and the restrictions on capital distributions via dividend payments and share buybacks that resulted in banks retaining capital. Taken together, most banks did not, in fact, need to use their buffers.

However, some evidence suggests that banks may have been hesitant to dip into their buffers had it been needed, in spite of the flexibility embedded in the regulatory framework. Potential reasons include: the fear of market stigma associated with buffer use that may lead to adverse market reactions; the uncertainty in macroeconomic outlook that prompts capital buffer conservation to be able to absorb potential future losses, and the preservation of liquid assets; and the uncertainty in supervisory expectations or responses in case of buffer use (including in terms of the timeframe for rebuilding those buffers). Overall, the functioning of capital and liquidity buffers may warrant further analysis.

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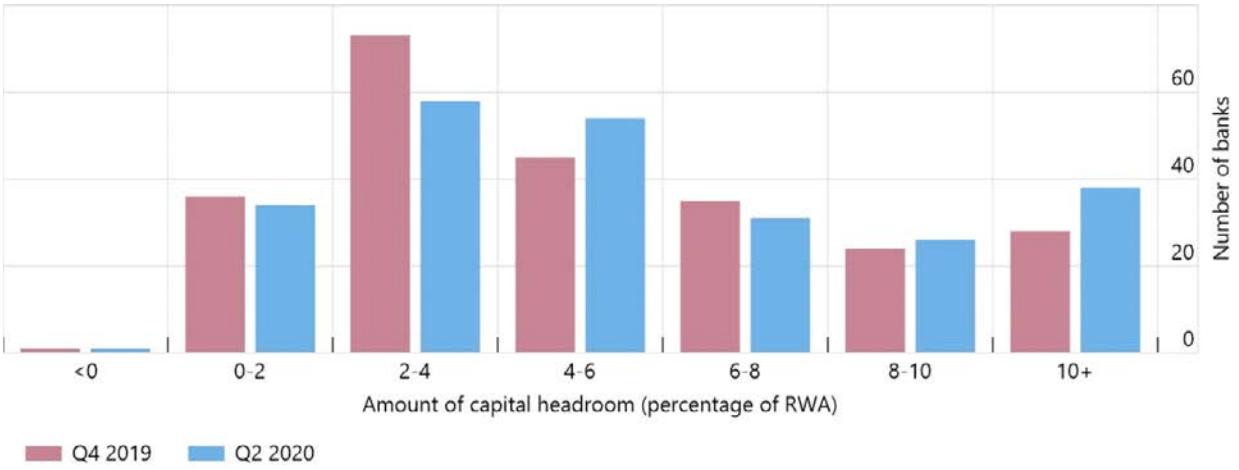
[10] See the FSB website for information on COVID-19 policy responses and related statements by the G20, FSB and SSBs.

[11] See the BCBS report on *Early lessons from the Covid-19 pandemic on the Basel reforms* (July 2021).

Banks' capital headroom **Graph 2.3**



Headroom above minimum and regulatory requirements in percentage points: Q4 2019 and Q2 2020 for a sample of 242 banks.
Source: Basel Committee on Banking Supervision.

The standard mechanism to conserve capital – distribution restrictions linked to banks falling into capital buffers – did not kick in given high capital ratios, but nevertheless many supervisors felt the need to pro-actively limit dividend distributions and/or share buybacks to ensure capital was conserved. Authorities took these decisions to support the capital generation capacity of banks and hence, their ability to lend going forward. Many authorities' decisions about capital distribution measures were informed by stress tests, financial projections and/or vulnerability analysis. As the financial impacts of the pandemic are yet to be fully realised, a number of authorities have maintained or fine-tuned the distribution restrictions, for instance by allowing only exceptional payouts or setting general limits.

Banks did not face large liquidity pressures overall, but some took defensive actions to maintain their liquidity levels well above regulatory minima. Overall, banks were able to maintain liquidity positions well above the minimum requirements. Certain banks, particularly those reliant on unsecured wholesale money markets, faced liquidity pressures in the early phase of the pandemic, but public sector support measures significantly abated those pressures. Banks met large drawdown demands on committed lines and some banks engaged in early buybacks of funding instruments from MMFs. Despite the relatively limited liquidity stress, some banks took defensive action, in part reflecting their targeting of internal liquidity coverage ratio (LCR) levels well above 100%. These actions do not appear to have contributed materially to the wider disruption in financial markets that prompted central bank interventions in March 2020.

Are there concerns about excessive procyclicality in the financial system? Are there any features in regulatory frameworks that have given rise to procyclicality?

COVID-19 highlighted some issues about procyclicality in the financial system that may warrant further consideration. Procyclicality is an inherent feature of the financial system, but an important role of macroprudential policy is to address the factors that amplify the transmission of shocks within the financial system and with the real economy. A number of post-2008 reforms have aimed at reducing excessive procyclicality. Notwithstanding the progress made since 2008, the pandemic has highlighted issues relating to margin calls; the behaviour of certain market participants; specific aspects of the use of external credit ratings; and the interaction between

the new expected credit loss (ECL) accounting and regulatory frameworks. Some of these issues need further examination as the support measures may have dampened or delayed their impact.

Further analysis is needed to understand differences in IM increases across CCPs and markets, the extent to which non-bank clients were prepared for the size of margin calls and whether their actions to raise liquidity impacted the rest of the financial system. Margin models are risk sensitive by design and regulation, so IM should be expected to increase as volatilities rise. Elevated margin levels in low-volatility periods may require smaller increases in response to spikes in underlying market volatility. Further analysis is required to better understand the drivers of differences in procyclicality across CCPs, asset classes, and products, as well as clear criteria for analysing the levels and effects of procyclicality. Additional assessment may also examine the degree to which pre-crisis margin levels driven by CCPs' anti-procyclicality measures or other tools or actions taken by CCPs helped to dampen the response of IM to extreme volatility. Some non-bank firms may not have fully planned for these persistent stresses across multiple asset classes in March 2020, though some firms may have taken steps to improve their liquidity management after the stress period. Instances of liquidity-raising by these firms may have been hampered by this stress, and may have contributed to broader stresses in normally liquid asset and funding markets.

Box: Margin and amplification mechanisms during the March 2020 market turmoil

In March 2020, total IM across CCPs globally increased roughly by 40%, relative to the average in February 2020. Exchange-traded derivatives (ETD), the cleared market with the largest aggregate IM, increased the most in absolute terms. While notably smaller than margin on derivatives, margin on cash equities increased by the largest proportion.

There was significant dispersion in the size of IM increases across, and within, asset classes (right panel, Graph 2.2). Much of this dispersion appears to be driven both by price volatility and CCP margin models' response to this volatility, with the largest IM changes in markets that saw the largest volatility spikes. Consistent with this, core IM (the component that is designed to cover market risk) was the main driver of IM calls during the period of peak volatility, with relatively limited impact of other contributors like add-ons. The impact on IM from increases in volumes and risk positions for OTC and ETD appears to be significantly smaller than the impact of volatility and CCP models' response to that volatility. The absence of major impact of portfolio changes is visible in particular on OTC interest rate swaps and ETD – which comprise the largest proportion of overall IM. IM increases were not uniform across CCPs providing clearing services for the same asset class, with the greatest dispersion in cash equities and securities, followed by ETD. The IM increases for IRS and CDS seem more clustered. There is a diversity of model choices across CCPs and asset classes, with individual CCPs' choices leading to differing reactions to underlying market volatility.

Variation margin (VM) flows during March and April 2020, across all asset classes and for clearing members' house and client positions, were significantly higher than average flows observed between January and February 2020. VM is a key tool to guard against the build-up of counterparty risk. Unlike IM, these flows generally must be satisfied with cash collateral for cleared transactions. While these flows were large, they are linked mechanically to changes in the underlying asset prices, and involve payments from those with negative to those with positive mark-to-market (MtM) movements. The timing and amount of these flows may have had uneven impacts on financial sector participants, and firms. Their preparedness for and reaction to the margin calls is a subject for further analysis.

Initial analysis suggests that, in March and April 2020, significant increases in IM and VM were experienced for both uncleared and cleared products, with aggregate payments in the first generally larger than the second. However, unlike in the cleared space, uncleared IM requirements for a given portfolio, as calculated under the SIMM™ approach, remained relatively stable during the stress period

– a likely consequence of its design, which includes data based on periods of stress. As a result, IM requirements on uncleared transactions may be less reactive to short-term increases in market volatility. However, reactivity is not the only characteristic of margin models, and a comparison of cleared and uncleared margin performance would require comparable data and more in-depth analysis.

As total CCP margin calls spiked in March, the proportion of cash collateral posted remained largely unchanged or increased across most asset classes. Market participants used a variety of means to meet margin calls, including available cash deposits, but in some cases took actions to raise liquidity from various sources. Non-bank financial intermediaries and clients generally have broader discretion than banks as to what they can consider as liquid as part of their liquidity risk management strategies. Where market participants sought to raise liquidity, some appear to have relied on monetising MMF shares, repo borrowing, and/or bond sales to meet margin calls under stress. In a systemic stress event of a largely unexpected magnitude, where market participants simultaneously attempt to raise liquidity in the same manner, those actions can further propagate stress across the system.

To aid with anticipating collateral demands in cleared markets, members and clients made use of tools and guidance provided by CCPs, including public disclosures, margin model calculators, parameters and notice periods. However, it appears that transparency around IM models differs across CCPs globally. The extent to which the information made available by CCPs to participants is or can be used in stress scenarios analysis may benefit from further analysis.

The actions of certain investors may have contributed to the amplification of liquidity imbalances and their propagation through the financial system. MMFs are susceptible to sudden and disruptive redemptions, and they may face challenges in selling assets particularly under stressed conditions, as was evident in March 2020. These features can lead to a first-mover advantage for redeeming investors in a stress event and thus make MMFs susceptible to runs that may contribute to stress in short-term funding markets. The FSB published a consultation report with policy proposals to address these vulnerabilities.[12] Whether a first-mover advantage in certain OEFs that engage in liquidity transformation could have motivated investor redemptions, how effectively OEFs' liquidity management tools mitigate redemption pressures, and whether redemptions and asset sales exceed those to be expected on the basis of risk/return charateristics of underlying assets are also being examined. In addition, market dysfunction in core government bond markets may have been exacerbated by substantial sales by some leveraged investors (unwinding of basis trade) and by foreign holders of those bonds.

Regulatory requirements do not appear to have been a dominant factor in determining dealer behaviour, but may have impacted behaviour in some markets. Higher capital and liquidity requirements ensured that dealers remained resilient during the March 2020 stress and initially helped absorb the shock via providing liquidity to market participants. Dealers typically are not active in making secondary markets in commercial paper and negotiable certificates of deposit, given the buy-and-hold nature of these instruments. Nevertheless, dealer activity and inventory levels in these markets were generally higher in March than in normal times, but still unable to satisfy demands given the size of the shock. Analysis suggests that no single factor can explain dealer behaviour in March 2020, but that the extraordinary uncertainty and volatility due to the pandemic was a key contributing factor.[13] This experience suggests that it may not be

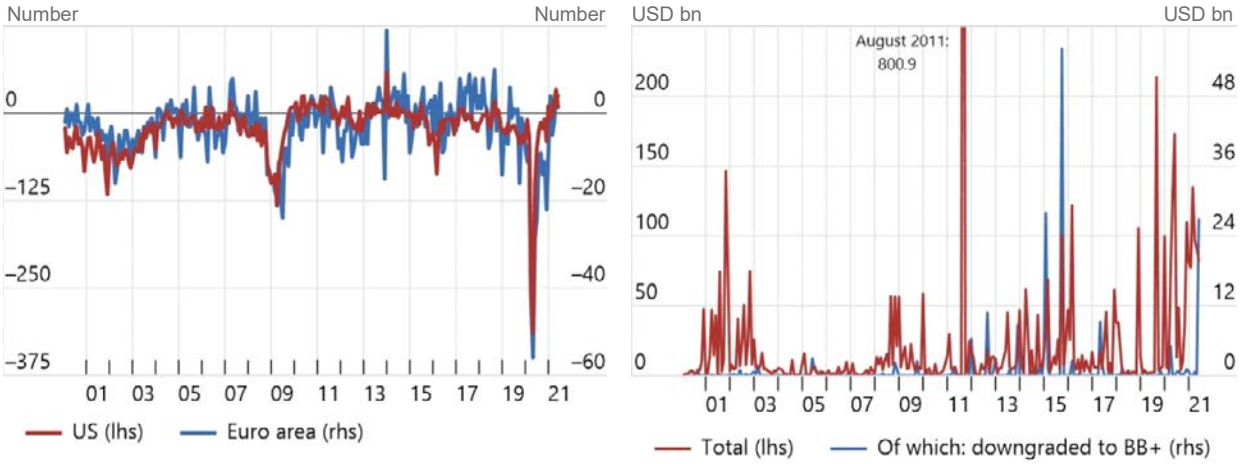
[12] See the FSB consultation report on *Policy proposals to enhance money market fund resilience* (June 2021).

[13] Other factors included demands on liquidity in other parts of their business; internal risk management limitations; prudential requirements; and the move to a work from home environment, at least in the initial phase of the turmoil. See Box 3 of the FSB consultation report on *Policy proposals to enhance money market fund resilience* (June 2021).

appropriate to expect dealers to meet all liquidity demands, particularly in stress periods. In government bond and repurchase agreement (repo) markets, bank positions overall remained stable or rose in response to the rapid surge in client demand for liquidity at the onset of the pandemic. While there is some empirical evidence that the leverage ratio may have lowered banks' incentives to mitigate imbalances that emerged in some markets, this ratio (which has not yet been implemented by all member jurisdictions) was not a binding constraint for most banks during the pandemic.[14]

There is limited mechanistic reliance by market participants on CRA ratings, in part due to regulatory action since the 2008 crisis, although some areas of concern remain. These include passive bond funds subject to index rebalancing, and institutional mandates referencing the credit rating of securities pledged as collateral or including termination clauses in derivatives and bank lending contracts. The March 2020 experience suggests that passive investors do have some discretion about the timing of sales and bond portfolio rebalancing can be delayed in periods of extreme market stress. However, further mass downgrades could be impactful in stressed times, as in the early stages of the pandemic (Graph 2.4), particularly if they are 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.

There were significant downgrades of bonds during the Covid-19 event **Graph 2.4**



[1] S&P ratings, non-financial corporations' local currency long-term debt rating; foreign current long-term debt rating if previous not available. Data as of 21 May 2021. [2] USD denominated bonds. S&P ratings, local currency long-term debt rating and foreign current long-term debt rating. Data as of 21 May 2021. [3] The vertical axis has been cut off at 250 to aid presentation, though the value of downgrades was higher in 2011 following the downgrade of the US sovereign, which had a knock-on effect to corporate ratings.

Sources: S&P Capital IQ; FSB calculations.

It is difficult to draw lessons at this stage about the potential procyclicality of the new ECL accounting framework. During the early stages of the pandemic, there was a concern about the potential impact of credit loss provisions on banks' loan losses and capital positions. However, extensive government support measures to borrowers significantly dampened the impact of the

[14] Several member jurisdictions temporarily exempted central bank reserves from leverage ratio calculation, which may have eased banks' balance sheet constraints on their intermediation activity. See the BCBS report on *Early lessons from the Covid-19 pandemic on the Basel reforms* (July 2021).

economic downturn on credit provision and thus on bank capital requirements. In addition, banks used the flexibility inherent in these frameworks to take account of the mitigating effects of support measures, as well as the greater flexibility introduced by the Basel Committee in deciding whether and how to recognise the impact of ECL provisions on their regulatory capital. As such, it is too early to draw clear lessons about the procyclicality of capital requirements arising from provisioning rules.[15]

3. Operational and cyber resilience

COVID-19 impacted the daily operations of financial authorities and institutions in unprecedented ways. The rapid move to work-from-home (WFH) arrangements increased the scope for cyber threats and for dependencies on third-party service providers. The pandemic also accelerated the take-up of digital financial services as financial institutions, FMIs and end-users reduced physical interactions. Both of these factors underscore the importance of effective operational and cyber security resilience arrangements.

What lessons can be drawn from the operational challenges faced by financial institutions and market infrastructures during the pandemic?

Financial institutions and FMIs moved to a remote working environment without major reported incidents. Precautionary lockdown measures tested the contingency plans of all financial market participants. Financial institutions and FMIs invoked business continuity plans and adopted WFH arrangements at short notice.[16] This posed some unique challenges, such as getting hardware and assets to employees during the lockdown, setting up home computers virtually, as well as obtaining sufficient capacity and bandwidth. Greater reliance on virtual private network (VPN) infrastructure and on unsecured access points (WiFi networks) posed new types of challenges in terms of patching and other cyber security issues. Notwithstanding these challenges, financial institutions have generally been able to continue operations in this mode for a prolonged period and ensure that financial markets remained open and orderly, even with in some cases significantly increased trading volumes. FMIs recognise that the threat landscape is evolving and are closely monitoring the trends and types of operational incidents, including those impacting critical service providers, as well as FMIs' ability to respond efficiently to severe incidents (e.g. default, disruption) either within their own operations or with a third party given ongoing remote working arrangements.

Supporting operational resilience and business continuity was a major objective of temporary support measures at the onset of the COVID event (Graph 3.1). These measures took different forms, depending on needs and circumstances, and varied across jurisdictions:

- Regulatory reporting deadlines were extended.

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15 See the BCBS report on *Early lessons from the Covid-19 pandemic on the Basel reforms* (July 2021) and BCBS working paper 39 on *The procyclicality of loan loss provisions: a literature review* (May 2021).

16 See the IOSCO *Thematic Review on Business Continuity Plans with respect to Trading Venues and Intermediaries* (May 2021).

- Timelines for financial institutions' implementation of changes or regulatory expectations were suspended or extended, including for releasing annual financial statements or other corporate disclosures.

- Onsite inspections or other supervisory procedures were suspended (e.g. postponement of data requests, remedial actions, internal model decisions, investigations, stress tests).

- Ad- hoc procedures for monitoring the operational resilience situation were established and many authorities issued specific guidance on the topic.

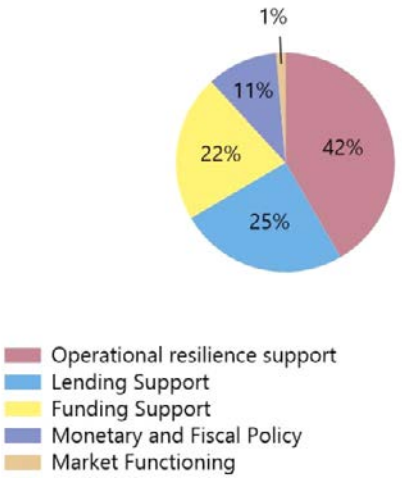
- Conduct of business rules were temporarily altered to facilitate continued compliance with certain requirements where firms' staff were working from home (i.e. suspension of know-your-customer requirements to facilitate identification without physical presence).

These measures have allowed financial institutions to continue functioning in remote mode and to focus on the immediate issues facing them. Increasingly, measures have involved cyber security arrangements in light of remote working and possible exploitations of security weaknesses by cyber threat actors.

Majority of policy measures aim to support operational resilience and business continuity **Graph 3.1**

Policy measures taken in response to COVID-19

Percent of total measures taken



Policy measures taken to support operational resilience

Number of policy submissions

Supporting operational resilience	Number of policy submissions
Business continuity measures	198
Reducing operational burden	309
Supervisory activity – targeted monitoring and issuing guidance	283
Supervisory Flexibility	187

Source: FSB, as of 20 May 2021.

The FSB and SSBs also took actions to enable firms and authorities to focus their resources on COVID-19 response. This includes extending deadlines for implementation of reforms, where this could be done in a way consistent with the reforms' underlying objectives.[17] The FSB and SSBs have also reprioritised, and in some cases, delayed implementation monitoring initiatives

[17] This included, for example, the extension of the implementation date of the final Basel III framework by one year, to 1 January 2023; the postponed implementation of the revised G-SIB framework by one year, to 2022; the deferral by one year of the two final implementation phases of the framework for margin requirements for non-centrally cleared derivatives; the extension of the implementation timelines for minimum haircut standards for non-centrally cleared securities financing transactions; and the deferral by one year of the Global Monitoring Exercise of the Holistic Framework for systemic risk in the insurance sector.

that were to begin in 2020 to maximise the value of their work during the pandemic and to use members' resources effectively.

Cooperation and coordination between financial authorities, health authorities and central governments was important to ensure that essential personnel are permitted to work on-site. For many financial institutions to continue to operate critical functions, a limited number of essential personnel are required to be on-site.[18] It has been important that health and safety authorities recognise such workers as essential personnel necessary to maintain infrastructure that is critical to the financial system. Continued FSB coordination has been essential given that these operations often span multiple jurisdictions, and FSB members will continue to share information and coordinate action.

The pandemic highlights the importance of putting in place effective operational risk management arrangements before a shock hits. The experiences and measures described above underscore the need for preparedness and planning for operational risk and business continuity contingencies. Continued investment in and maintenance of cyber security, such as firewalls, antivirus software, intrusion detection systems and security operations centres, are essential. At the same time, financial institutions need to recognise the human factor as a core element of the cyber security chain (for example, the handling of confidential information by employees working from home). Common methods of attack, such as phishing, target both employees and consumers.[19]

How has digital innovation affected operational and cyber resilience during the pandemic?

Digitalisation in financial services accelerated further during the pandemic. WFH arrangements propelled the wider adoption of new technologies, shifting the interaction and collaboration within and between institutions to digital and enabling financial institutions to continue providing services through the pandemic. Clients also shifted to digital channels and use of FinTech apps expanded at a rapid pace.[20] Innovative digital and remote solutions were provided by both incumbents and new entrants, including FinTech and BigTech firms.

Digitalisation of regulatory and supervisory processes and requirements by authorities also accelerated. Some authorities enabled a changeover of certain paper-based processes to online interaction. For instance, possibilities for remote customer onboarding processes were implemented or expanded and electronic submission of certain paper documents and the use of electronic signatures in certain documents permitted. A few jurisdictions implemented a temporary rule facilitating the closing of physical trading floors and transitioning to all-electronic trading, in most cases followed by the full or partial reopening of trading floors.

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18 These functions include: providing consumer access to cash, electronic payments and other banking and lending services; as appropriate keeping branches and call centres open; processing claims under government support programmes; insurance services; risk management; supporting financial operations, such as staffing data and security operations centres; and supporting third-party providers who deliver core services.

19 See the BCBS *Principles for operational resilience* (March 2021).

20 For example, in Switzerland, almost 20% of all retail banking customers have used at least one online service for the first time during the crisis, and just 6% have made no use of them at all. See *COVID-19 boosts digitalisation of retail banking* by Deloitte (2020) and *How COVID-19 has sped up digitization for the banking sector* by EY (November 2020).

Outsourcing to third-party providers, such as cloud services, may have enhanced operational resilience at financial institutions, including in a number of emerging market and developing economies with less developed IT infrastructures. However, increased reliance on cloud service providers and other third-party service providers may give rise to new practical challenges in assessing financial institutions' operational and cyber resilience (e.g. lockdown measures in some countries impacted institutions relying on third parties located there).[21] For instance, dependence on one or a small number of outsourced or third-party service providers for critical services could create a single point of failure with potential adverse consequences for financial stability and/or the safety and soundness of multiple financial institutions, and this concentration risk may have increased as a consequence of COVID-19. Moreover, accessing, auditing and obtaining information from those service providers poses challenges for financial institutions in managing the associated risks, in particular when onsite audits and inspections (including face-to-face meetings) may be restricted. Effective management of such risks across the supply chain is essential to mitigating operational and cyber risk.

No major cyber incidents have been reported in the financial system but the number of cyber attacks has increased (Graph 3.2). Most cyber frameworks did not envisage a scenario of near-universal remote working and the exploitation of such a situation by cyber threat actors. While cyber activities such as phishing, malware and ransomware are not new, they grew with the spread of the pandemic, from fewer than 5,000 per week in February 2020 to more than 200,000 per week in late April 2021.[22] Financial institutions have generally been resilient but they may need to consider adjustments to cyber risk management processes, cyber incident reporting, response and recovery activities, as well as management of critical third-party service providers (e.g. cloud services).

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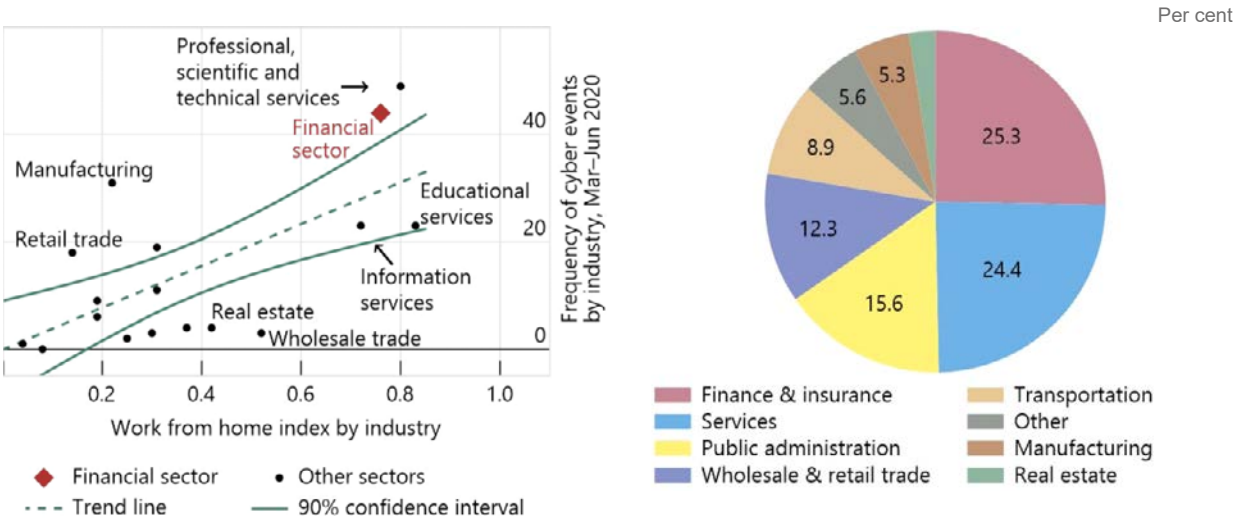
21 See the FSB discussion paper on *Regulatory and Supervisory Issues Relating to Outsourcing and Third-Party Relationships* (November 2020).

22 See the report by the Financial Services Information Sharing and Analysis Center on *Navigating Cyber 2021: The Case for a Global FinCyber Utility*.

WFH arrangements open up new possibilities for cyber attacks **Graph 3.2**

WFH index versus cyber events during Covid-19[1] Covid-19-related cyber events by sector[2]



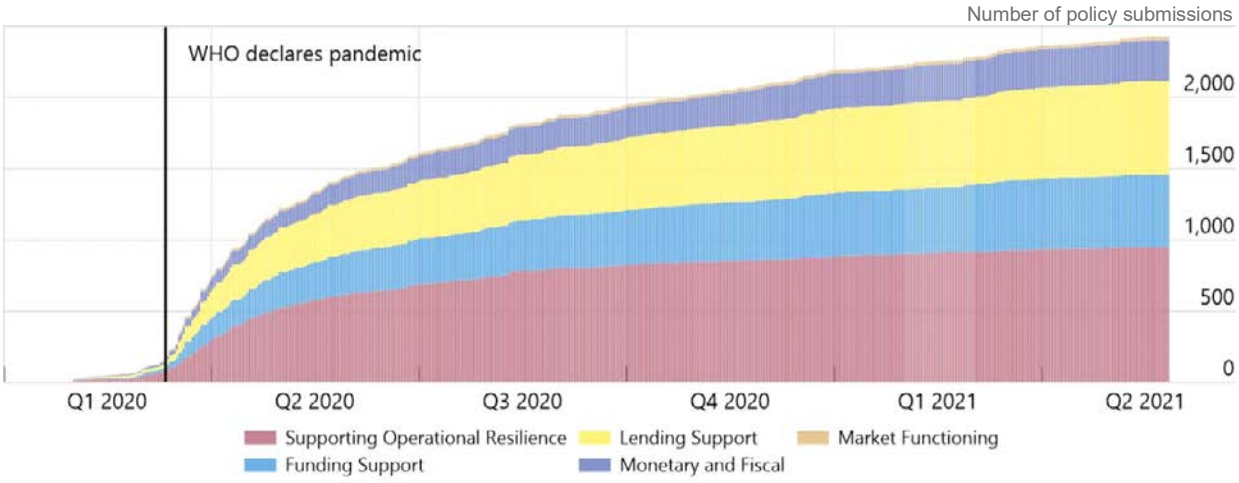
[1] Excludes the health sector. [2] Based on cases classified by Advisen as Covid-19-related. Includes data up to 9 September 2020. The sample in the graph excludes the health sector (57 Covid-related cases) and affecting health-related items of the manufacturing sector (163 cases).

Sources: Aldasoro, I, Frost, J, Gambacorta, L, and White, D (2021): "Covid-19 and cyber risk in the financial sector", BIS Bulletin, no 37, January.

4. Crisis management preparedness

The speed, scale and scope of the policy response to COVID-19 was without precedent (Graph 4.1). At the same time, the COVID-19 experience demonstrated once again how interconnected the global financial system is, and how market reactions and policies have cross-border effects, thereby underscoring the critical importance of global regulatory cooperation. It has also tested the usefulness and adequacy of new approaches for supervision and crisis management, including with respect to data and analytical tools.

New measures by type (cumulative) **Graph 4.1**



Source: FSB calculations.

Have authorities been able to effectively cooperate and exchange relevant information with their official sector counterparts?

Cross-border arrangements established in recent years facilitated timely and effective information sharing and cooperation among authorities. Such mechanisms include supervisory colleges and crisis management groups (CMGs) for global systemically important banks (G-SIBs). Many participants in these mechanisms had previously met in physical meetings and established relationships of trust. This enabled the more intense communication and coordination that took place virtually during the pandemic, given restrictions on travel and in-person meetings. Authorities were able to share materials via email and other digital means across borders during the crisis, relying on previously established secure systems. Securities regulators continued to use IOSCO's *Enhanced Multilateral Memorandum of Understanding (MMoU) Concerning Consultation and Cooperation and the Exchange of Information* and the 2002 MMoU to request assistance on enforcement during the pandemic.

There are opportunities to enhance information sharing arrangements further. Where authorities still rely on physical documentation for the exchange of supervisory information with foreign counterparts, coordination has been more of a challenge during the lockdown periods. While several jurisdictions are introducing measures to facilitate the digital sharing of information locally, there are still some residual security concerns around the digital sharing of data across borders. Whereas cooperation and information sharing worked well within supervisory colleges and CMGs for G-SIBs, there is scope to further improve the timeliness, nature and scope of the information, and access to group-level information for host authorities.

The sharing of information on developments and policy responses by the FSB and SSBs also helped authorities to learn from each other. The FSB, BCBS, IOSCO and IAIS have developed repositories of policy measures that their members have taken in response to the crisis, with the aim of sharing experiences among their memberships. These have supported work at the international level on assessing the impact and effectiveness of policy measures, as well as on the factors that determine whether, when and how to extend, amend or unwind those measures.

Global policy coordination through the FSB has been agile, evolving with financial stability needs.[23] At the beginning of the pandemic, daily information exchange of financial policy responses, and assessments of vulnerabilities in the financial system helped jurisdictions to respond quickly to the effects of COVID-19. FSB members also worked closely to coordinate action to maintain global financial stability, keep markets open and functioning, and preserve the financial system's capacity to finance growth. FSB, SSBs and international organisations reinforced each other's messages about policy coordination in public communication. FSB members also agreed to a set of principles to underpin policy measures taken in response to COVID-19. As the pandemic has progressed, the FSB has placed greater emphasis on understanding how policies are working, and to explore considerations around the extension or amendment of, or exit from, support measures when appropriate.[24]

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[23] See the FSB report on the *COVID-19 pandemic: Financial stability impact and policy responses* (November 2020).

[24] See the FSB report on *COVID-19 support measures: Extending, amending and ending* (April 2021).

What are experiences with, and lessons for authorities and financial institutions for, supervision and crisis management, including data and tools?

Authorities needed to be flexible and adapt their supervisory priorities and operational modalities for conducting supervision to maintain adequate supervisory intensity. The remote working environment made it more challenging for financial institutions to comply with certain regulatory requirements, some of which needed to be temporarily relaxed. Examples include on-site examinations and certain other supervisory activities previously conducted on-site. Authorities also needed to reprioritise supervisory activities in order to focus on issues emerging from the crisis.

Supervisory and regulatory policies may need to adapt and incorporate both short- and long-term considerations. Supervisors and regulators may need to adjust their response over time to address the changing underlying circumstances, including growing solvency risks and changing assessments of the path of recovery. The immediate response to COVID-19 and the deployment of support measures by governments aimed at ensuring business continuity and supporting lending to the real economy. Regulators and supervisors provided operational relief to financial institutions, for example by postponing or refocusing supervisory activities, allowing them to shift resources where they were needed most. In light of the economic uncertainty and to preserve capital in the short-tem, supervisors imposed temporary restrictions on dividends and share repurchases. Whereas the immediate policy responses focused on liquidity and capital, longer-term considerations include the impact of the unwinding of support measures and the effect of these measures on firms' balance sheets, business models and market structure. Regulatory and supervisory authorities may also need to adopt a tailored response with respect to individual firms, for example with respect to those that entered the crisis less resilient.

Scenario-based stress tests have helped authorities to adjust their policies effectively. Stress tests and scenario analyses have been important analytical tools for evaluating the impact of COVID-19 on solvency. They can assist authorities in understanding where further policy support may be most needed and effective under different conditions, allowing them to better target and calibrate supervisory responses. Stress testing can also facilitate communication between financial institutions and supervisors as well as external communication. This can help to maintain and restore confidence, reduce uncertainty, and inform firms' risk management. There are several challenges to the design of stress tests and scenario analyses and the interpretation of their results, which is why their disclosure may need to be accompanied by appropriate communication and supervisory action to help prevent adverse outcomes.

Recovery and resolution planning have helped improve firms' capabilities, such as the ability to monitor liquidity daily and provide more granular reporting of liquidity positions and distribution within the group to their regulators. Monitoring metrics, both at the micro level and at the macro level, need to be further enhanced. For example, banks' forward-looking liquidity estimates in the context of resolution planning may not fully reflect the actual liquidity distribution within their groups, and hence that distribution may be sub-optimal in a crisis.

The pandemic highlighted the need for authorities to continue efforts to ensure credible liquidity arrangements for times of stress and resolution. Although most authorities did not observe concerns about liquidity ring-fencing during the March 2020 market turmoil, some pointed out that ring-fencing remains a risk in future crises. The ongoing work on funding in resolution as

well as on the distribution of unallocated total loss-absorbing capacity (TLAC) resources can contribute to strengthening home-host coordination in a crisis.

Monitoring risks and the effects of policy measures in the pandemic environment may require a more timely and frequent collection of data than currently captured by regulatory reports. Effective crisis management depends on reliable and timely information in a rapidly evolving environment. Regulators and supervisors need to be able to collect data not currently captured by regulatory reports or that are currently captured only at infrequent intervals to monitor the effectiveness of policy measures (e.g. new loan requests and approvals, delinquencies, uptake of any repayment flexibility programs). Complementing this, market intelligence has been an important mechanism for obtaining information on the effects of policy measures in a timely manner.

Despite recent progress, data gaps remain. The rapidly changing pandemic environment highlighted the need for the timely availability of data to enable authorities to assess the implications of economic developments for the financial system and to analyse interconnectedness within the system. Thanks to the strengthening of data collections, policymakers have been able to gain better access to key information to monitor risks. However, gaps remain in terms of identifying and measuring leverage in non-bank financial institutions and interconnectedness between different parts of the financial system. Further information is also needed to support recovery and resolution planning, for instance on the distribution of unallocated TLAC resources across a group and on the profile of investors.

Clear communication to the industry and the public can help to support the effectiveness of policy measures. Many supervisory authorities have encouraged banks to use their capital buffers and communicated their intention to allow banks to rebuild buffers gradually. Clear communication can help to prevent stigma effects from individual banks' actions. Similarly, communication about the policy path can help households and firms to plan their own actions and could thereby boost confidence and investment. To strengthen market confidence and reduce uncertainty about the health of the financial system and individual firms, some authorities have disclosed the results of COVID-related stress testing or other analysis. Any such disclosure or communication regarding the health of the financial system must recognise the uncertainty regarding the future macroeconomic scenario. If stress test results are disclosed, authorities should consider accompanying them with a discussion of the policy implications.

5. Looking ahead

The COVID-19 event may yet test the resilience of the global financial system. Economic forecasts have been revised upwards, and buoyant asset valuations could be tested by a further rise in government bond yields. At the same time, uncertainty remains high against the backdrop of uneven vaccination progress and the continuation of containment measures. Asynchronous economic cycles could lead to widening interest rate differentials between economies, potentially inducing disorderly capital outflows from EMEs as dollar denominated investments are suddenly reallocated across jurisdictions.

Identifying systemic vulnerabilities early on remains a priority. The current low level of corporate insolvencies may be predicated on continued policy support. Banks and non-bank lenders could still face additional losses as these measures are unwound, revealing the extent of the economic

scarring across sectors and jurisdictions. The results of recent bank stress tests suggest that the largest banks are well capitalised and will remain resilient under a range of recovery scenarios. Yet there may be questions about banks' willingness to sustain real economy financing in an environment of deteriorating non-financial sector credit quality. Preserving financial stability is a necessary precondition for ensuring the smooth flow of finance to the real economy.

A gradual and targeted future unwinding of COVID-19 support measures should support financial stability during the recovery.[25] Authorities may follow a flexible, state-contingent approach, adjusting and withdrawing gradually, by ensuring that measures are targeted; requiring beneficiaries to opt in; making the terms on which support is provided progressively less generous; and sequencing the withdrawal of support measures. Clear, consistent and timely communication about policy intentions can help the economy adjust to changes in policy.

One of the legacies of the pandemic may be a build-up of leverage and debt overhang in the non-financial sector. High corporate and, in some cases, sovereign indebtedness was already a concern before the outbreak of COVID-19. Rapid and large credit support has increased debt levels, especially in the hardest-hit sectors. This is warranted in the context of an exogenous shock such as the one produced by the pandemic, but it may also keep unviable firms solvent with knock-on effects on the economy and financial system. Addressing debt overhang, including by facilitating the market exit of unviable companies and an efficient reallocation of resources to viable firms, may be a key task for policymakers going forward.

The COVID-19 experience reinforces the importance of completing remaining elements of the post-crisis reform agenda. Overall, those parts of the global financial system where implementation of post-crisis reforms is most advanced displayed greater resilience. The financial stability benefits of the full, timely and consistent implementation of G20 reforms, including with respect to Basel III, OTC derivatives, resolution frameworks, and NBFI, remain as relevant as when they were initially agreed. At the same time, it will be important to evaluate the functioning of the reforms during the COVID-19 event in more depth and evaluate whether these reforms, once implemented, are effectively working as intended. This includes analysing and understanding how macroprudential policy has functioned in practice.

Evidence gathered thus far already suggests some specific aspects of how the post-crisis regulatory framework functioned should be further examined. This includes the role and usability of capital and liquidity buffers; the performance of countercyclical elements in prudential regulation; and potential remaining sources of excessive procyclicality whose impact may have been dampened or delayed as a result of the official sector support.

Vulnerabilities in parts of the NBFI sector need to be addressed with priority, keeping momentum and ambition in the work underway. The underlying structures and mechanisms that exposed the financial system to considerable strains in March 2020 are currently still in place. It is important to advance the comprehensive work programme the FSB has developed, in collaboration with SSBs, to enhance the resilience of the NBFI sector while preserving its benefits. This includes policy work to enhance MMF resilience and analysis of vulnerabilities in open-ended funds, the role of margins, and the drivers of bond market liquidity. International

[25] See the FSB report on *COVID-19 support measures: Extending, amending and ending* (April 2021).

coordination of NBFI policy responses can help to avoid regulatory arbitrage and market fragmentation given the cross-border activities of many entities in this sector. Steps to ensure that the regulatory framework delivers the intended level of resilience also includes work to assess the adequacy of financial resources of CCPs in light of their systemic importance.

COVID-19 has reinforced the need to promote resilience amidst rapid technological change in the economy and global financial system. The rapid use and adaptation of new technology have helped firms to operate effectively in the new environment. At the same time, they have put the spotlight on the need to ensure operational resilience in an environment of greater reliance on outsourcing and third party service providers, including on a cross-border basis. More generally, the boost that COVID-19 seems to have given to digital financial services, in particular various forms of digital payments, reinforces the need to ensure that regulatory frameworks and approaches provide a solid basis for harnessing the benefits of such innovation while containing their risks.

Next steps on these issues will be set out in the final report in October. This interim report will be used to engage with external stakeholders on preliminary findings and issues raised from the analysis to date. The final report to the G20 Summit in October will reflect any further FSB/SSB work by then and takeaways from stakeholder engagement, and set out tentative lessons and next steps to address the identified issues.