

FSI Briefs

No 11

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Covid-19 pandemic

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October 2020

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ISSN 2708-1117 (online)
ISBN 978-92-9259-426-8 (online)

Stress-testing banks during the Covid-19 pandemic¹

Highlights

- *In response to the Covid-19 pandemic, a number of authorities that regularly conduct stress tests on individual banks adjusted their approach. They performed ad hoc exercises to assess the vulnerability of banking sectors as a whole. These exercises are different from regular ones in terms of key features such as objectives, design and methodologies, and communication.*
- *In the short term, such stress tests can support the assessment of the pandemic's impact at an aggregate level.*
- *As the pandemic evolves and its impact is better understood, authorities can further adjust their stress tests and refine their key features accordingly. That will allow for a more granular, bank-level assessment. It may also help authorities to achieve the necessary balance between keeping banks safe and sound, and ensuring an adequate flow of credit to the real economy.*

1. Introduction

When the Covid-19 pandemic struck, the official sector responded by implementing support measures and adopting expansionary monetary and fiscal policies. Prudential authorities provided regulatory relief in various ways,² with the aim of maintaining an adequate flow of credit to the real economy, while preserving financial stability.

Banks generally had comfortable capital and liquidity buffers before the pandemic hit. This, together with the unprecedented number of response measures, has helped to contain its initial impact on the banking sector.

However, the deep economic impact of the pandemic is likely to weaken the solvency position of banks. As a consequence, an assessment of banks' resilience would be in order. That assessment may help in the design of supervisory actions for the more vulnerable institutions without jeopardising an accommodative prudential policy stance.

To achieve this, stress tests can be useful to authorities in two ways. In the short term, they can be used as a tool to analyse and communicate how the pandemic can affect the banking sector as a whole. For this, the exercises need to be changed to accommodate the specific features of the pandemic shock. With more time and a greater understanding of the pandemic's impact on the economy, there may be scope for a more ambitious use of these tests. Further refinements of this tool can make it suitable to identify specific pockets of vulnerability and firm-specific supervisory action.

Section 2 summarises some specific adjustments to stress tests in response to the Covid-19 pandemic. Section 3 discusses how three authorities have adjusted their regular exercises to provide an initial assessment of the impact of the pandemic on the banking sector. Section 4 concludes with reflections about the relevance of stress tests during the pandemic and the possible expansion of their use from a first-response tool to a more a precise instrument applied to individual banks.

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² See Borio and Restoy (2020) for a discussion of the exceptional support measures introduced in response to the pandemic.

2. Stress tests under the Covid-19 pandemic – design options

Stress tests of banks by authorities have become a regular feature of supervisory activities across various jurisdictions. They are forward-looking exercises aimed at evaluating the impact of severe but plausible scenarios on the resilience of banks. Their results are often used to ask banks to adjust their capital or liquidity positions and, in some cases, to validate their capital distribution policies.

There are several challenges in conducting a stress testing exercise during a crisis, such as the Covid-19 pandemic, in comparison with normal times. First, in a crisis, the initial shock has already materialised. Moreover, the impact of the Covid-19 shock on banks is especially difficult, given that it originated outside the economy and the financial system, and its transmission channels are not well known. To address this problem, authorities may adjust their stress test programmes in two steps. Initially, adjustments will be more limited, allowing for a system-wide assessment only. Over time, adjustments can be more thorough and allow for an assessment of the impact for each bank. The first step can nonetheless be justified by the urgency to assess the possible implications of the pandemic for the flow of credit to the economy and to prepare for possible supervisory and, if needed, bank resolution responses.

In order to identify the type of changes that may be necessary, it is helpful to break down a typical stress test exercise into its main components, ie its objectives and three key features, ie governance, implementation (technical requirements and design) and outcomes, including communication.³

In terms of objectives, in normal times stress tests tend to focus on the resilience of individual banks and their capacity to absorb future shocks. In a crisis, this microprudential objective remains, but it is accompanied by an equally important macroprudential objective, ie to measure the aggregate impact on the financial system. In the Covid-19 crisis, stress tests can also help to evaluate under what conditions banks could continue providing credit, and what risks this would entail for them.⁴ Stress tests could also be used to get a sense of the possible implications of a collective action problem leading to aggregate lending being too low, compared with the social optimum. Combined with the exceptional measures taken in response to the pandemic, these tests can help authorities balance the risk of a deep economic contraction with that of putting the banking sector's viability under threat.

Whether a stress test has both a top-down and a bottom-up component is part of the governance of the exercise. If both are included, as in many regular exercises, the process to complete a stress test usually takes more time. It will take even longer during the Covid-19 crisis, when convergence between the top-down and the bottom-up components will be especially difficult given the lack of suitable models to assess such a unique shock. In a crisis, authorities can therefore decide to be more nimble by including only the top-down part. This allows authorities to obtain and publish a more timely assessment of the financial sector impact and facilitates a swift policy response. In the Covid-19 context, taking this approach in the first instance may also help to free up bank resources, as banks have been called upon to support several Covid-related response measures. However, running only the top-down component comes at the cost of lower precision, if no updated bank information is collected. This approach can also deliver a weaker impact on banks' behaviour and choices, if they are not informed of their own results.

Turning to implementation/methodological features, both the scenario design and models may need to be revised for an initial shock such as a pandemic. This is due to the considerably different nature of the shock, compared with standard macroeconomic shocks in regular stress tests.

In terms of scenario design, a scenario that reflects the macroeconomic impact of the Covid-19 pandemic will need to incorporate some new metrics, eg related to infection/mortality rates and indicators of economic activity in the sectors most impacted by social distancing requirements. This will take time to

³ See Baudino et al (2018) for a review of stress testing in normal times and a description of its key components.

⁴ See Lewrick et al (2020) for an example of such an assessment under the Covid-19 scenario.

develop. A quicker alternative could be to conduct some form of sensitivity analysis based on an existing scenario. For instance, a traditional adverse scenario could be tweaked to increase the level of stress in the most affected economic sectors. Another approach would be to design a new baseline scenario that incorporates the deep economic contraction already visible in the first few months of 2020, and then to create a stress scenario on this basis. More fundamentally, the scenario design will have to incorporate an assumption as to how deep and prolonged the economic impact of the Covid-19 shock will be.

Given the uncertainty around the path of key variables under the pandemic, it may be preferable to use more than one stress scenario, or some variation in key stress variables, and obtain a range of outcomes. It may also be helpful to break down the results by year, as those in later years could be particularly imprecise.

Another dimension that complicates the scenario design is the need to take a decision on whether to include policy responses. Typically, stress tests exclude policy measures taken in response to the initial shock, as the exercise is expected to provide a quantification of the impact of the shock before any policy measure is taken. In the case of the Covid-19 pandemic, however, exceptional support measures were introduced very soon after the crisis started, on a large scale, and across policy domains. In many countries, such measures have included fiscal policies (eg to protect employment), regulatory and supervisory relief measures (eg adjustments in timelines to implement tougher regulatory measures, suspension of consultations and on-site inspections, and restrictions on dividend distributions), and monetary policy measures (eg, reduction in policy rates and quantitative easing). Introducing these measures in the scenario, though not aligned with practices in normal times, recognises the extraordinary policy effort made to alleviate the risk of a deep recession, including the large absorption of borrowers' credit risk by governments by means of public guarantees (Baudino (2020)). However, their inclusion is not without practical challenges, as it requires making assumptions about the effectiveness of the measures, their possible extensions and the situation once these measures are withdrawn or expire.

Separately, the stress test's implementation will also be affected by the fact that the Covid-19 pandemic presents new types of risks and transmission channels, so the models used in normal times may not be suitable. For instance, the shock may have prolonged and non-reversible effects on the viability of some sectors, such as tourism, aviation and hospitality. This will require new models that can map the shock's propagation across the economy and on the profitability and solvency parameters of banks.

Finally, the outcomes, ie results and communications, may be different under a Covid-19 pandemic. Stress test results are always subject to some degree of approximation, but this may be even higher in the case of a Covid-19 stress test, due to the high uncertainty around it, especially in the first round of such exercises. The credibility of the results would be further questioned by market participants if they were to be used as triggers for remedial actions by banks or supervisors before the tests have been refined and tailored to the new type of shock. Stress test results in a Covid-19 situation may therefore be considered indicative only in the first round of exercises. This could change once authorities have time to develop sufficiently reliable approaches to deal with the specificities of the Covid-19 situation, and banks can contribute to the exercise via the bottom-up component.

The indicative nature of the results may also affect decisions about the level of disclosure in communications with the public.⁵ As they grapple with the novelty of the pandemic, in first instance authorities may opt to focus on some general information about economy-wide trends and decide to release only aggregate results and, possibly, some indication of the distribution of the capital impact of the shock across banks. Bank-level results would be left for disclosure in the second, and more thorough, step of the revisions to stress testing approaches. In both cases, communication can be enhanced by the authorities making it clear what objectives they attach to the exercise.

⁵ There have been strong calls for bank-level disclosure in the exercise conducted by the US authorities. For instance, Judge (2020) and Tarullo (2020) advocate bank-level disclosure, even after considering the limitations of the exercise, as they see transparency as essential in the crisis response. They argue that, without such disclosure, the exercise has limited value.

3. The example of three ad hoc stress tests during the pandemic

Several routine, bank-specific stress test exercises were under way when Covid-19 hit, and authorities had to take a decision about their completion. In many cases, they decided to lighten the supervisory burden, allowing banks to devote more resources to support their customers during the pandemic. Accordingly, such regularly conducted, public stress tests were suspended in a number of jurisdictions. In some cases, they were replaced by ad hoc exercises conducted by the relevant authority.

Table 1 summarises the approach taken by three authorities that decided to conduct a first round of these ad hoc exercises. They are the Bank of England (BoE), the European Central Bank, Banking Supervision (ECB) and the Board of Governors of the Federal Reserve System (Fed).⁶

Features	Agency	Bank of England	ECB Banking Supervision	Board of Governors of the Federal Reserve System
Date of exercise		May 2020	July 2020	June 2020
New Covid-specific scenario(s)?		YES ("illustrative" scenario)	YES (central and severe)	NO; use scenario of Dodd-Frank stress test, but adjust three key variables and make targeted adjustments
Top-down / bottom-up		Top-down only	Top-down only	Top-down only
Number of downside Covid scenarios		One ("illustrative" scenario)	Two (central and severe scenarios)	Three (U/V/W-shaped)
Stress horizon		3 years (to Q1 2023)	2½ years (to Q4 2022)	3 years (to Q1 2023)
Include Covid-19 policy response?		YES (fiscal, regulatory and monetary policy support)	YES (monetary, regulatory and fiscal relief measures, to a large extent)	ONLY regulatory and bank tax relief measures
Any publication?		YES, instead of regular stress test	YES, instead of regular stress test	YES, in addition to regular stress test
Publication of bank-level results or distributions?		NO	NO bank-level, but publication of distribution of CET1 ratios, across the sample and business models	NO bank-level, but publication of distributions of CET1 ratios across the sample
Aggregate CET1 drop in the scenario		380 bp	190 bp (central scenario) and 570 bp (severe scenario)	210 bp (V-shaped), 380 bp (U-shaped) and 430 bp (W-shaped)
What happens with the ad hoc stress test results?		Authorities encourage banks to support lending, otherwise there is a risk of an even bigger economic contraction	Use the stress test to assess the impact of Covid-19 on banks, and identify potential vulnerabilities at an early stage	Use the stress test to understand the implications of downside scenarios for bank capital

Sources: ECB (2020a,b); Bank of England (2020a); Board of Governors of the Federal Reserve System (2020a,b); Quarles (2020).

⁶ The BoE decided to postpone its regular stress test in March. The ECB postponed its exercise following the decision by the European Banking Authority (EBA) to postpone the EU-wide exercise by one year. Both the ECB and the BoE replaced their annual stress tests with ad hoc exercises, which were completed by May and July respectively. In the United States, the Fed completed its annual Dodd-Frank exercise, under a pre-Covid-19 scenario, but added a sensitivity analysis, and the results were published in June. These are the three ad hoc exercises covered in Table 1. The three authorities use different terms to describe these exercises. The BoE uses the term "desktop stress test", the ECB "vulnerability analysis" and the Fed "sensitivity analysis".

The three ad hoc exercises were conducted around the middle of the year, following the rapid deterioration in economic conditions that had emerged by the end of the first quarter of 2020. All exercises were understood to be a first response to the crisis, with fully fledged exercises delayed until either 2021 (EBA (2020)) or the development of a new reference scenario (Board of Governors (2020b)). Accordingly, in all cases, the exercises comprised only the top-down component, and banks were not involved.⁷

Some of the features of the regular stress tests were not changed. That is the case for the scenario horizon, the sample of banks and the underlying models to assess the impact of the macroeconomic shock on banks' balance sheets. Some other key features were changed, as discussed below.

Scenario

The relevant scenario used for the stress analyses was derived in different ways in the three cases under study. However, in all cases, authorities highlighted the higher than usual level of uncertainty around these scenarios. As a consequence, they considered the results as only indicative and, where possible, they provided a range of estimates for the capital ratios of the banking system.

Both the ECB and the Bank of England developed a new set of macroeconomic projections for monetary policy purposes, incorporating the deep economic contraction already visible in the data in the first months of the year. For the Bank of England, these projections became the basis for the desktop analysis of financial stress, becoming the "illustrative" scenario.⁸

The ECB used its mid-year projections as its central scenario for the stress analysis, but it also developed a "severe" scenario on their basis and calculated capital shortfalls under both.⁹

The Federal Reserve retained its pre-Covid-19 stress scenario, but adjusted it based on two sets of conditions.¹⁰ One was the design of new paths for three key variables (unemployment, GDP and 10-year Treasury rates); and the second was the introduction of some adjustment to recognise changes in banks' balance sheets since the beginning of 2020, but which could not be captured by a change in the scenario.¹¹ The Federal Reserve then developed three alternative downside scenarios, to track different shapes the economic contraction could take following the pandemic (V-, U- and W-shaped scenarios).

Inclusion of Covid-19 policy responses

The Covid-19-related policy response was included in the three ad hoc stress tests in different ways.

The ECB and the Bank of England included the measures that had been introduced by the time the exercises were performed, both those affecting banks directly (regulatory relief, dividend restrictions and accounting changes) and the real economy (monetary and fiscal policies), although, as the ECB

⁷ In August, the BoE conducted a second round of ad hoc stress tests, by performing a reverse stress test under two illustrative scenarios. The BoE took an explicitly countercyclical approach in the August exercise, given its view that, when the financial system enters a stress period, calibrating a stress test by layering stress on top of an already stressed outlook could damage the economy, as banks may withdraw from providing credit (Bank of England (2020b)). The key methodological and communication features of the May and August BoE exercises are otherwise comparable.

⁸ To get a sense of its severity, the BoE compared its ad hoc exercise with its regular, 2019 stress test. It also reported the possible drop in the banking sector's CET1 ratio (20 bp) in the event of lockdown measures being extended by two weeks.

⁹ By way of comparison, the ECB also conducted the analysis under the 2020 baseline scenario prepared for the EU-wide exercise (CET1 ratios increase over the stress horizon in that case).

¹⁰ In September, the Fed published two fully fledged hypothetical scenario, announcing that it planned to use them to derive and publish bank-level stress test results by year-end (Board of Governors (2020c)).

¹¹ These changes refer to the increase in banks' balance sheets in comparison with end-2019 data and an increase in risk-weighted assets related to market risk; and the incorporation of sectoral stress and some regulatory changes related to banks' credit loss accounting, the supplementary leverage ratio and the tax code.

noticed, this also depended on the availability of accurate information on the relevant measures (ECB (2020b)).

The Federal Reserve took a different approach, and it included only measures directly related to banks' regulatory and tax environment. Thus, it did not include the exceptional government support measures related to, for instance, unemployment insurance and loan guarantees. Nor do its results account for the reduction in bank capital due to dividend distribution in the first half of 2020.

Communication

All three authorities published a general description of their analysis, covering the key assumptions and the additional considerations that had to be taken into account in a Covid-19-related exercise.

In all cases, there was no bank-level disclosure of the results. Rather, the impact on the aggregate CET1 capital ratios, under each of the variants of the relevant scenarios, was disclosed. In addition, both the ECB and the Federal Reserve provided a distribution for CET1 ratios across the sample of banks and, in the case of the ECB, also across bank business models.¹²

Authorities advised caution in interpreting the results. For the Bank of England, the exercise gave an overview of the overall impact on the banking sector. Similarly, the ECB viewed the results as reliable at an aggregate level and, before deciding on any bank-specific action, it would find it necessary to interact with the banks.

Objectives and use of the exercise

The authorities gave an indication of how they plan to use the results. The Bank of England emphasised the importance of continued bank lending to the economy and the risk that banks may decide to restrict lending, with the unintended consequence of an even deeper economic contraction. The ad hoc exercise could therefore be used to gauge the risk of system-wide contraction in bank lending.

The ECB decided to perform its ad hoc exercise with a double aim: to assess the impact of the Covid-19 pandemic on the financial and prudential position of banks in the euro area and to identify potential vulnerabilities at an early stage. The ECB also outlined a plan to use the results in its communication with banks, with the aim of probing their reporting and ensuring that banks are sufficiently robust. In particular, it expects to use the results, in a qualitative way, in its regular supervisory review, and it sees the results as useful to challenge banks' capital projections, foster consistency in assessment of risks and promote prudent provisioning policies.

The Federal Reserve viewed the ad hoc exercise as a tool to understand the implications of the three downside scenarios for bank capital (Quarles (2020)). It decided to ask all participating banks to submit new capital plans after the Board provides an updated scenario (Board of Governors (2020b,c)), while there was no immediate follow-up action from the ad hoc exercise itself.

4. Concluding considerations

Stress tests, being forward-looking assessments of banks' resilience, represent a useful instrument in authorities' toolkit to assess banks' conditions even under such unusual circumstances as the Covid-19

¹² The categories were: global systemically important banks and universal banks; diversified lenders; corporate, wholesale and sectoral lenders; and small domestic and retail lenders.

pandemic. The experience of the three exercises discussed in this Brief shows, however, the difficulties of adjusting a complex exercise such as an annual stress test to a very different set of conditions.

In response to the Covid-19 pandemic, stress tests can, in the first instance, help gauge the system-wide impact of the pandemic on the banking sector. This can help authorities in comparing the economic impact of the pandemic against the capacity of the banking sector to continue supporting the real economy by providing credit to it. But, over time, it may be important to have a more granular view of the pandemic's impact on individual banks. This in turn will help guide any possible supervisory or resolution action. For this to happen, the initial adjustments in the stress testing frameworks that were introduced in first response to the pandemic would benefit from further refinement.

Importantly, stress tests under Covid-19 can be most effective when authorities explain the objectives of these exercises and ensure that they are well aligned with the way the results will be employed, as well as shared with the banks and the public.

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