Stress testing the UK banking system: Key elements of the 2021 stress test

The 2021 solvency stress test will assess the major UK banks and building societies against a UK and global scenario that reflects a severe path for the current macroeconomic outlook.

Content

1: Executive summary

The Bank of England's (hereafter 'the Bank') approach to concurrent solvency stress testing aims to use periods when the economy is growing to build up banks' buffers of capital, ready to be drawn on to support the economy in a stress. Once the economy enters a real stress, such as that driven by the Covid-19 (Covid) outbreak, the focus changes. At this point stress tests are used to assess whether the buffers of capital that banks have built up are large enough to deal with how the prevailing stress could unfold.

Following the Covid outbreak, the Bank cancelled the 2020 concurrent stress test and instead undertook desktop analysis of the resilience of the UK banking sector to the unfolding stress.

In December 2020, the Financial Policy Committee (FPC) judged that UK banks, in aggregate, have capital buffers that allow them to lend in, and remain resilient to, a wide range of possible outcomes for the UK and global economies. This judgement was based on analysis in a 'reverse stress test' exercise, conducted in August 2020, which calculated how severe the economic paths for the UK and global economies would need to be in order to deplete regulatory capital buffers by around 5 percentage points. The illustrative paths generated by that exercise were very severe, resulting in a cumulative loss of economic output associated with the Covid outbreak that was around twice as big as that in the Monetary Policy Committee's (MPC) August 2020 central projection, and accompanied by a significant rise in unemployment.

The aim of the 2021 solvency stress test will be to update and refine this assessment. It will test banks' end-2020 balance sheets to a scenario similar to that generated by the reverse stress test. In the scenario for which banks are asked to assess their balance sheets, cumulative UK GDP losses over the period 2020–22 will total around £800 billion (37% of 2019 UK GDP), relative to a pre-Covid projection in line with the January 2020 Monetary Policy Report (MPR). The stress scenario will also see UK unemployment peak at a little under 12% and UK residential and commercial property prices fall by around 33% between the end of 2020 and the trough of the stress. In the scenario the cumulative fall in world GDP over the three years from 2020 to 2022 equates to 31% of 2019 GDP, relative to a pre-Covid baseline.

The timetable for the 2021 solvency stress test will be staggered. Participating banks will submit projections for credit impairments and credit risk-weighted assets (RWAs) in April, rather than the usual timing of June. This will help inform further desktop analysis by the Bank in the first half of the year. The additional stressed projections will be submitted in June, as usual, with bank-specific results published in 2021 Q4. To help facilitate this change to the usual timetable, and in recognition of ongoing operational challenges within participating banks, banks will not be requested to submit baseline projections and the ring-fenced subgroups of stress-test participants will not be included in the 2021 test. And while the qualitative review will continue to be an important component of the 2021 stress test, the scope of this year's exercise will be adapted accordingly.

The results of the 2021 solvency stress test will act as a cross-check on the FPC's judgement of how severe the current stress would need to be in order to jeopardise banks' resilience and challenge their ability to absorb losses and continue to lend. It will therefore cross-check the judgement that the banking system is resilient to a reasonable worst-case stress in the current environment. It will also support the Prudential Regulation Authority's (PRA's) objective of promoting the safety and soundness of PRA-regulated firms.

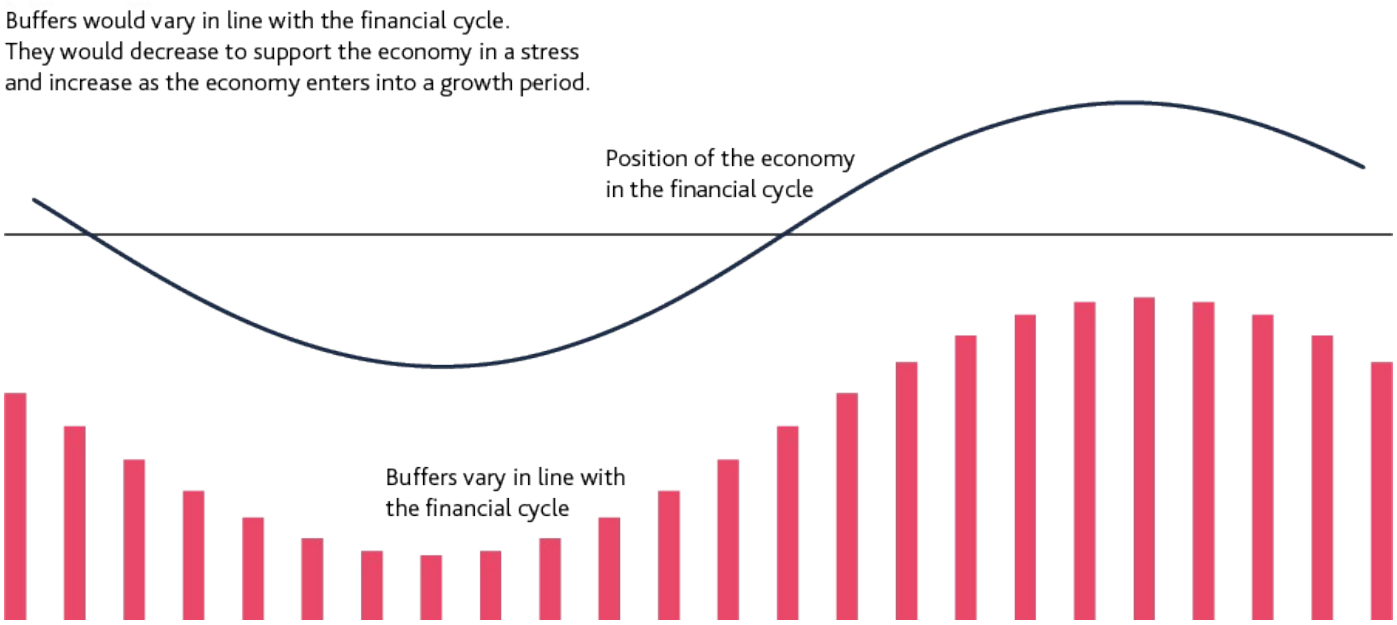
There will be no mechanical link from the results to regulatory response. But the outcome of the test will be used to update the FPC's judgements about the most appropriate ways in which the banking system can continue to support the economy through the stress. It will also be used as an input into the PRA's transition back to its standard approach to capital-setting and shareholder distributions through 2021.

2: Background

The Bank's annual stress test examines the potential impact of an adverse scenario on the resilience of the banking system and individual institutions within it.

The Bank's approach to stress testing aims to build banks' buffers of capital up when the economy is growing, so that they can be drawn down during periods in which the economy is in stress (Chart 2.1). This is achieved by stress testing banks against a broad, severe and hypothetical stress scenario that gets tougher as debt – and other vulnerabilities that can amplify a recession – builds up.

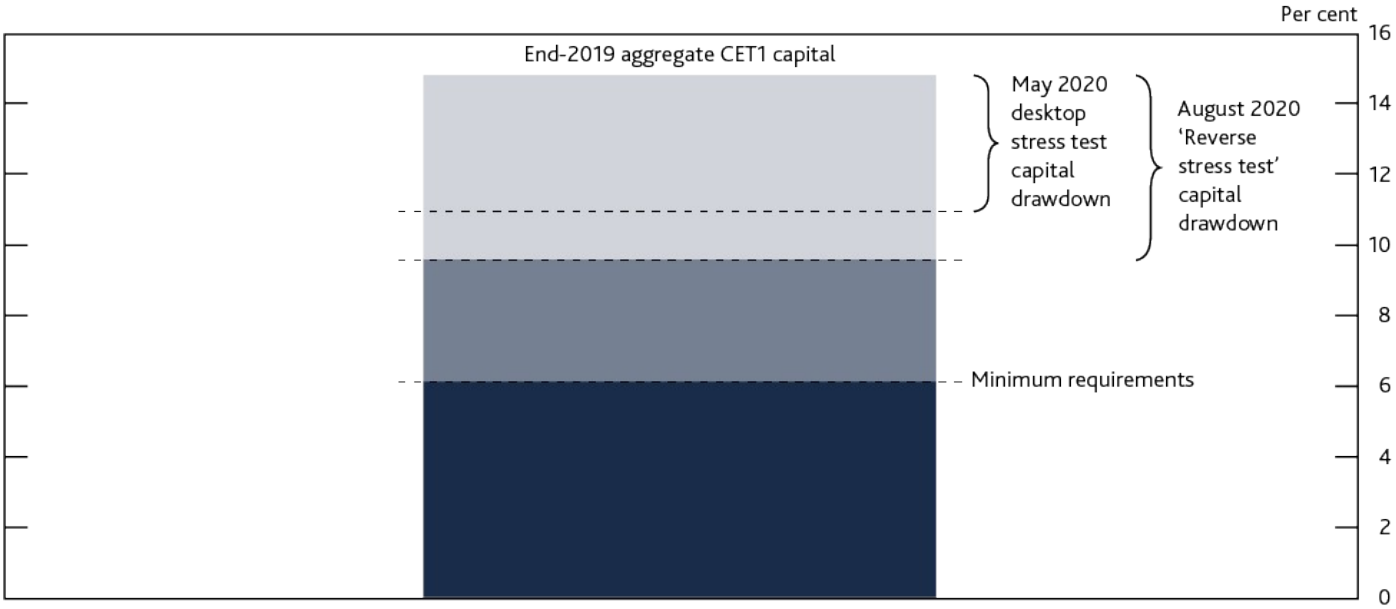
Chart 2.1: Buffers decrease as the economy enters into a stress and increase as it enters into a growth period
Changes to banks' regulatory buffers through the financial cycle implied by the Bank's countercyclical approach to stress testing



Once the economy enters a stress, as it has now, the focus changes, with stress tests used to assess if the buffers of capital that banks have built up are large enough to deal with how the stress could unfold. In the first instance, that involves testing banks against the potential effects of the stress given the prevailing macroeconomic outlook. The FPC undertook this exercise in May 2020 through its desktop stress test, see the May 2020 interim Financial Stability Report (FSR). This found that banks had the capital buffers to withstand substantially greater losses than those resulting from the MPC's plausible illustrative scenario of May 2020 (Chart 2.2).

Chart 2.2: In 2020, when the economy entered a stress, the Bank carried out a desktop stress test and a reverse stress test

Capital drawdown in the May 2020 desktop stress test and August 2020 reverse stress test



Sources: Participating banks' Stress Testing Data Framework data submissions, Published accounts, Bank analysis and calculations.

The next step, given the economic outlook in an unfolding stress, is to assess that banks' buffers of capital are sufficient to deal with the stress, even if it turns out to be more severe than central expectations. The August 2020 reverse stress test therefore considered how severe a macroeconomic stress banks could withstand while demonstrating their ability to continue to lend, see the August 2020 FSR.

The FPC judged the scenarios generated by the reverse stress test reflected reasonable worst cases for the current economic outlook. Banks were therefore judged to have capital buffers that would allow them to lend in, and remain resilient to, a wide range of possible scenarios for the UK and global economies over the coming year.

The aim of the 2021 solvency stress test will be to update and refine the FPC's assessment. It will test banks' end-2020 balance sheets to a scenario similar to that generated in the reverse stress test. It will therefore be a cross-check on the FPC's judgement of how resilient banks are to a reasonable worst-case stress in the current environment and will support the PRA's objective of promoting the safety and soundness of PRA-regulated firms.

Further details of how this approach has been applied, the potential outcomes of the test and specific details of the macroeconomic stress scenario are set out below.

Detailed guidance for stress-test participants, along with the projections data underlying the 2021 stress scenario can be found on the Bank of England website.

3: Key features of the 2021 solvency stress-test scenario

The Bank's 2021 solvency stress test and guidance have been calibrated and produced by Bank staff, under the guidance of the FPC and Prudential Regulation Committee (PRC).

In line with the Bank's response to the Independent Evaluation Office's 2019 report on stress testing, Bank staff engaged early with supervisory colleagues on the design of the test. This approach helps ensure that risks identified by supervisors of individual banks are reflected in the scenario.

3.1: Banks participating in the 2021 solvency stress test

As set out in March 2019, Virgin Money UK will now participate in the test having met the annual cyclical scenario (ACS)

threshold of retail deposits. The Bank has decided not to include the ring-fenced subgroups of stress-test participants in the 2021 solvency stress test, having previously said they would be included. This reflects the additional burden their inclusion for the first time would place on participating banks given the amended timetable of the 2021 solvency stress test (see section 3.5) and the ongoing challenges posed by Covid. The Bank expects to include ring-fenced subgroups of stress-test participants in the 2022 test.

The eight banks and building societies (hereafter 'banks') taking part in the 2021 solvency stress test account for around 75% of lending to the UK real economy. These banks have a diverse range of business models and some operate in a broad range of international markets.

3.2: Summary of the stress-test scenario

The scenario used for the 2021 solvency stress test is not a forecast. It is a severe path for the economy in 2021–25 on top of the economic shock associated with the Covid pandemic that occurred in 2020. It is broadly consistent with the 'double-dip' scenario generated in the FPC's reverse stress test of August 2020 and represents an intensification of the macroeconomic shocks seen in 2020. When combined with the economic shocks already seen in 2020 it implies a cumulative three-year loss (with respect to the pre-Covid baseline) of 37% of 2019 UK GDP and 31% of 2019 world GDP (Table 3.A). On a start-to-trough basis, UK residential property prices fall by 33% in the stress scenario and UK unemployment rises by 5.6 percentage points to peak at 11.9% (Table 3.B).

The UK stress incorporates a second dip on top of that seen in 2020, with GDP falling sharply again at the beginning of 2021.

Unemployment rises sharply in the stress, with certain sectors such as hospitality, leisure, construction and transport more affected than others. The weakness in employment feeds through to sustained weakness in both residential and commercial property prices. Sharp falls in commercial real estate prices reflect current stretched valuations in prime offices,[1] and significant structural headwinds to demand in the retail and non-prime office segments of the market.

Even during the recovery phase, uncertainty remains high and confidence low. Consumers continue to save, demand remains weak, and while investment does begin to recover it does so from a low base. The result is a permanently weaker economy, with output below its pre-recession projected path even at the end of the scenario in 2025.

Economic weakness persists across the world, leading to ongoing weakness in global GDP.

The UK's major trading partners experience severe and synchronised slowdowns. Protectionist tendencies become entrenched and world trade is very weak in the first two years of the scenario. Throughout 2021, financial market participants are disappointed by progress in global macroeconomic outcomes. As result, there is a further decline in equity prices and a rise in bond spreads. A persistently low interest rate environment creates challenges for banks' revenue generation.

Table 3.A: The stress scenario implies three-year cumulative UK GDP losses of 37% when combined with the shocks already seen in 2020
Three-year metrics in the 2021 stress scenario (a) (b)

Per cent	
	Three-year impact (2020–22)
UK real GDP (three-year cumulative loss)	-37
PPP-weighted world real GDP (three-year cumulative loss)	-31
UK unemployment (three-year average)	8.9

Sources: Bank of England, Eikon from Refinitiv, IMF World Economic Outlook, ONS and Bank calculations.

(a) Three-year cumulative GDP losses are relative to a pre-Covid baseline consistent with the January 2020 Monetary Policy Report, expressed as a percentage of 2019 GDP.
(b) The UK unemployment figure is the average UK unemployment rate between 2020 and 2022 inclusive.

Table 3.B: The stress scenario incorporates large property price falls and a significant rise in unemployment
Key start-to-trough metrics in the 2021 stress scenario

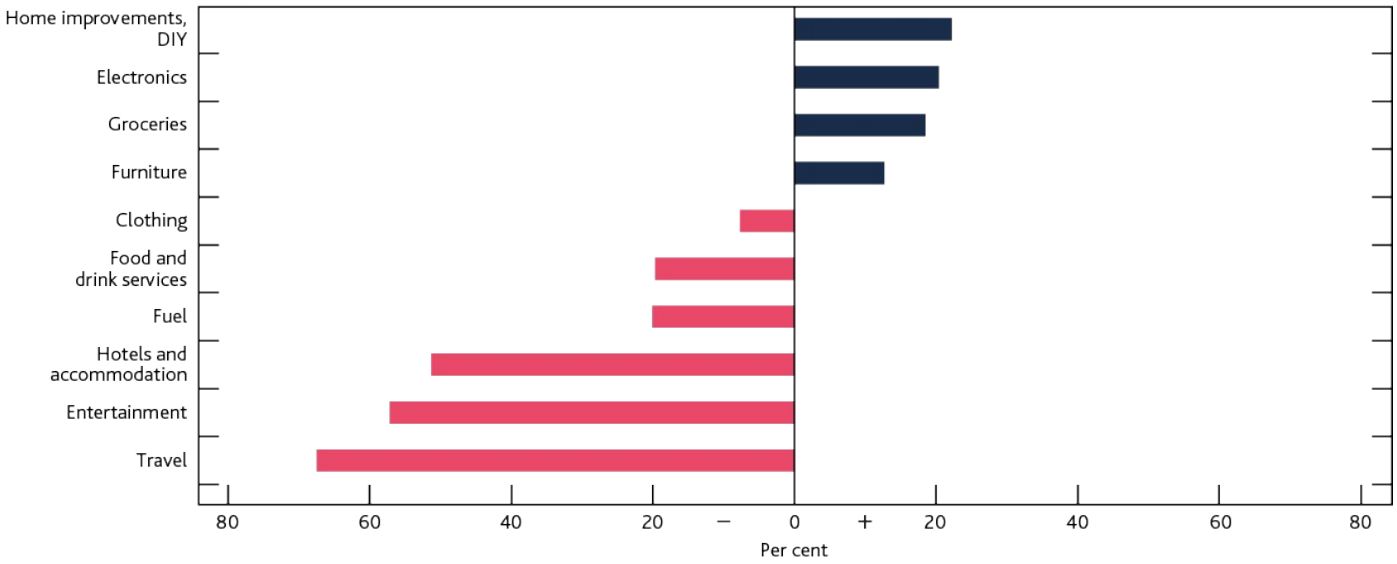
Per cent	
	Change from end-2020 to trough
UK real GDP	-9.0
World real GDP	-9.6
UK residential property prices	-33
UK commercial real estate prices	-33
UK unemployment rate (change from end-2020 to peak)	5.6 percentage points

Sources: Bank of England and Bank calculations.

Committees will give particular consideration to the risks associated with structural changes in the economy.

The Covid pandemic has resulted in a material change to consumer spending patterns. Spending on travel, entertainment and hospitality has fallen sharply as a result of mandated closures and reduced capacity, as well as a general increase in precautionary behaviour by consumers (Chart 3.1). A key focus of the analysis in this year's stress test will be to examine the potential risks to the UK banking system were these developments to continue and become more entrenched.

Chart 3.1: Spending on some services has been lower recently
Annual growth in spending in selected categories, 2020 Q4



Sources: Barclays and Bank calculations.

To this end, the stress scenario incorporates an intensification of the structural changes embodied in the MPC's most recent central forecast of November 2020, which assumes a weaker path for UK GDP in the longer term, driven by changes to consumer habits and production decisions. This will help the FPC and PRC to consider the risks that might be building from underlying longer-term changes, a number of which may have been accelerated by the Covid outbreak. To aid committees in this assessment, participating banks will be asked to set out the impacts of these structural changes in their submitted stressed projections.

As set out in the November 2020 MPR, the MPC expects some effects of the Covid shock to take some time to unwind. Changing patterns of behaviour will lead to a reallocation of resources and a rise in the medium-term rate of unemployment, in part because some workers need to retrain or move between sectors. The 2021 stress scenario assumes these developments are even more pronounced, with sectors such as hospitality, leisure, construction and transport particularly affected.

Globally, the scenario implies weak world trade, with ongoing weaknesses in output particularly apparent in those countries more exposed to vulnerable sectors and more reliant on tourism, high oil prices and/or have greater dependency on external finance.

The traded risk stress will be consistent with the macroeconomic scenario – but there will be no separate traded risk scenario.

The 2021 solvency stress test includes shocks to several financial market variables. The global stress causes financial market participants' perceptions of risk to increase, and their risk appetite to diminish. Credit risks rise in a number of markets, with investment-grade US corporate bond spreads rising by 140 basis points and high-yield US corporate bond spreads rising by around 480 basis points. These stresses are lower than those included in the 2019 ACS. This is, in part, because of a smaller rise in risk premia in the stress scenario given an expectation from market participants that markets remain functional despite the broader macroeconomic stress. UK and US equities also fall by 20%. The 2021 solvency stress test does not include an additional and separate 'traded risk scenario'.

The test will also examine the ability of participating banks to withstand the default of a number of specifically named counterparties (collateralised and uncollateralised) that would be vulnerable to the macroeconomic scenario. In determining the counterparties to default, banks are instructed to consider both the current creditworthiness of their counterparties, and how that creditworthiness might deteriorate under the stress scenario.

In addition to examining the impact of the default of specific counterparties, the scenario will test the broader impact on banks of a portion of counterparties that are vulnerable to the stress scenario. For the 2021 solvency stress test, banks will be expected to stress the airline and airline leasing sector as well as identifying their most significant sectorial cohort of Covid-related exposure under the stress. The test also includes stressed revenue and costs projections for investment banking activities.

Banks will be assessed against known misconduct costs beyond those already paid or provisioned for.

For the 2021 test, the Bank is using the same methodology as that applied in previous tests. That means the test will incorporate stressed projections for potential misconduct fines and other costs beyond those paid or provided for by the end of 2020. Banks are asked to provide stressed projections for misconduct costs that relate to known misconduct issues and have a low likelihood of being exceeded.

3.3: UK lending in the stress

An important macroprudential goal of the stress test is to help the FPC assess whether the banking system is sufficiently well capitalised to support the real economy in the face of severe adverse shocks. The importance of this goal has been particularly apparent over the course of 2020 following the outbreak of Covid. UK households and businesses have needed support from the financial system to weather the economic disruption associated with the pandemic. The UK financial system has so far provided that support, reflecting the resilience that has been built up since the global financial crisis, and the extraordinary policy responses of the UK authorities.

In line with the approach taken in previous stress tests carried out by the Bank, the 2021 solvency stress test is calibrated on the assumption that banks satisfy the demand for credit from UK households and businesses throughout the stress scenario.

The government-backed loan guarantee schemes are assumed to close as announced in March 2021 and banks must assume that they do not reduce the supply of credit. Rises in bank funding costs may as usual be passed through to borrowers. The Bank has published paths for aggregate lending to UK households and private non-financial corporations based on that assumption. In total, over the five years of the stress scenario, lending to the UK real economy increases by 3.1%. Stress-test participants will be expected to submit projections for lending under the stress which are consistent with those aggregate paths.

3.4: Qualitative review

A key objective of the Bank's concurrent stress-test framework is to support a continued improvement in banks' own risk management and capital planning capabilities. The experience of 2020 and the Covid outbreak have highlighted the importance of having robust internal stress-test processes in place. For that reason, as in previous years, the Bank will undertake a qualitative review of banks' stress-test capabilities as part of the 2021 solvency stress test.

Given the change to the timetable for this year's stress test, the Bank is mindful of the need to manage the burden on participating banks while producing useful information to assist the PRA with its supervisory activities. For this reason the scope of the qualitative review will be adapted accordingly. There will be two components to the 2021 exercise: (1) a delivery assessment, which focuses on submission quality across the different risk areas; and (2) a review of progress addressing Bank feedback from the 2019 ACS qualitative review, when participating banks were assessed against the Basel Committee on Banking Supervision stress-test principles.[2]

The delivery assessment will focus on: the volume of errors made by banks in their stress-test submissions; explanations for the submitted projections, including justifications for any assumptions made; and operational issues including the timeliness of submissions and volume of requests for resubmissions.

3.5: Timetable

In light of the uncertain economic outlook, and given the fact the 2020 stress test was cancelled, the Bank will run the 2021 solvency stress test on a staggered timetable. This is so the Bank can assess the resilience of the banking system

using detailed stressed projections from participating banks that are based on end-2020 balance sheets and a stress scenario specifically tailored to the risks associated with the current macroeconomic outlook.

Participating banks will submit stressed projections for impairments and credit RWAs in April, rather than June. This information will inform desktop analysis by Bank staff in the first half of 2021. The intention is that aggregate outcomes of this exercise will be published in Summer 2021.

The further projections will be submitted in June, with the Bank then conducting its usual in-depth stress-test analysis. Full, bank-specific results will be published in 2021 Q4 as usual. As in previous years, the Bank is committed to disclosing the information necessary to explain the results of the stress test. This will include at least as much bank-specific information about the headline impact of the stress on capital adequacy as in previous tests.

To help facilitate the change to the usual timetable outlined above, and in recognition of ongoing operational challenges within participating banks, banks will not be requested to submit baseline projections[3] and the ring-fenced subgroups of stress-test participants will not be included in the 2021 test. In addition, while the Bank will continue to undertake a qualitative review given the important role in plays as a tool for continuous improvement in risk management and stress-testing practices, the scope of the 2021 exercise will be adapted accordingly.

Box: Outcomes of the 2021 solvency stress test

The 2021 solvency stress test will update and refine the FPC's assessment of the resilience of the UK banking system.

In December 2020, the FPC judged that UK banks, in aggregate, have capital buffers that allow them to lend in, and remain resilient to, a wide range of possible outcomes for the UK and global economies. This judgement was based on analysis in a reverse stress-test exercise, conducted in August 2020, which calculated how severe the economic paths for the UK and global economies would need to be in order to deplete regulatory capital buffers by around 5 percentage points. The illustrative paths generated by that exercise were very severe, resulting in a cumulative loss of economic output associated with the Covid outbreak that was around twice as big as that in the MPC's August 2020 central projection, and accompanied by a significant rise in unemployment.

The aim of the 2021 solvency stress test will be to update and refine this assessment. The results of the 2021 solvency stress test will act as a cross-check on the FPC's judgement of how severe the current stress would need to be in order to jeopardise banks' resilience and challenge their ability to absorb losses and continue to lend. It will therefore cross-check the judgement that the banking system is resilient to a reasonable worst-case stress in the current environment and will support the PRA's objective of promoting the safety and soundness of PRA-regulated firms.

Committees will use the capital drawdown included in the August 2020 reverse stress test as a benchmark against which to assess the impact of the 2021 test.

The macroeconomic paths generated by the reverse stress test were calibrated to deliver an aggregate Common Equity Tier 1 (CET1) capital depletion of around 5 percentage points – the extent of the capital drawdown in the 2019 stress test in which the banks demonstrated they could continue to lend. In reality, the reverse stress test showed the UK banking system was able to withstand scenarios even more severe than this. Banks have buffers of capital larger than those set for regulatory purposes (Chart 2.2); so, based on the end-2019 start point of the reverse stress test, the £120 billion of losses assumed in the exercise would, in aggregate, deplete only around 60% of the buffers of capital which sit above banks' minimum requirements.

Given the 2021 stress scenario is broadly similar to the reverse stress test paths, the FPC and PRC will use the aggregate metric of the capital drawdown in the reverse stress test as a benchmark against which to consider the impact of the test. Considering the impact of the stress scenario against this benchmark will allow the FPC to refine its assessment of how severe the current shock would need to be in order to jeopardise banks'

resilience and challenge their ability to absorb losses and continue to lend.

With an aggregate capital drawdown in line with the August reverse stress test, the impact on individual banks will vary. Committees will benchmark each bank's capital low point against a reference point determined in the same way as the hurdle rates used in the 2019 stress test.[4] This reference point will therefore be comprised of the sum of each bank's minimum CET1 capital requirements (that is the internationally agreed Pillar 1 common minimum standard of 4.5% of RWAs plus any uplift to that minimum requirement set by the PRA, ie Pillar 2A); and any systemic buffers that a global or domestic systemically important bank is required to hold. A similar approach will be taken to consider the impact of the test on banks' Tier 1 leverage ratios.

There will be no mechanical link from the results of the 2021 solvency stress test to regulatory response.

The purpose of the benchmarks set out above – for the system and individual banks within it – is to enable the FPC and PRC to update judgements about how severe the current stress would need to be in order to challenge their ability to absorb losses and continue to lend.

The FPC and PRC have previously emphasised how there is no mechanical link between the stress-test results and the setting of capital buffers. Nor is the stress test a mechanical pass/fail regime. This will remain the case for the 2021 solvency stress test.

Furthermore, the aim of the 2021 solvency stress test differs from a standard stress test, which is to ensure that banks have built up buffers of capital, ready to be drawn on to support the economy in a stress. The focus this year will be to inform judgements about the most appropriate ways in which the banking system can continue to support the economy through the ongoing stress. As noted in the December 2020 FSR, the results of the 2021 test will also be used as an input into the PRA's transition back to its standard approach to capital-setting and shareholder distributions through 2021.

Banks will once again be assessed on an International Financial Reporting Standards 9 (IFRS 9) transitional basis.

In line with previous years, the Bank will assess participating banks' results taking account of the internationally agreed IFRS 9 transitional arrangements. To ensure transparency, and consistent with the previous approach, the Bank will also publish each bank's capital and leverage low points on a non-transitional basis. In recent tests, hurdle rates have been adjusted to take account of the impact of IFRS 9 (see Box 1 of the December 2019 FSR for further details). The reference points used this year will also be adjusted in this way.

Work on an enduring treatment for IFRS 9 in the stress test is ongoing and the Bank is still keen to learn more about the impact of IFRS 9 in stress. For that reason the 2021 test will include a small additional data request, which could help inform a future approach.

The framework will continue to take a dynamic approach for the calculation of banks' Pillar 2A capital requirements through the course of the stress. This will allow the test to reflect the way Pillar 2A would evolve in a real stress.

4: Detailed description of the 2021 macroeconomic stress scenario

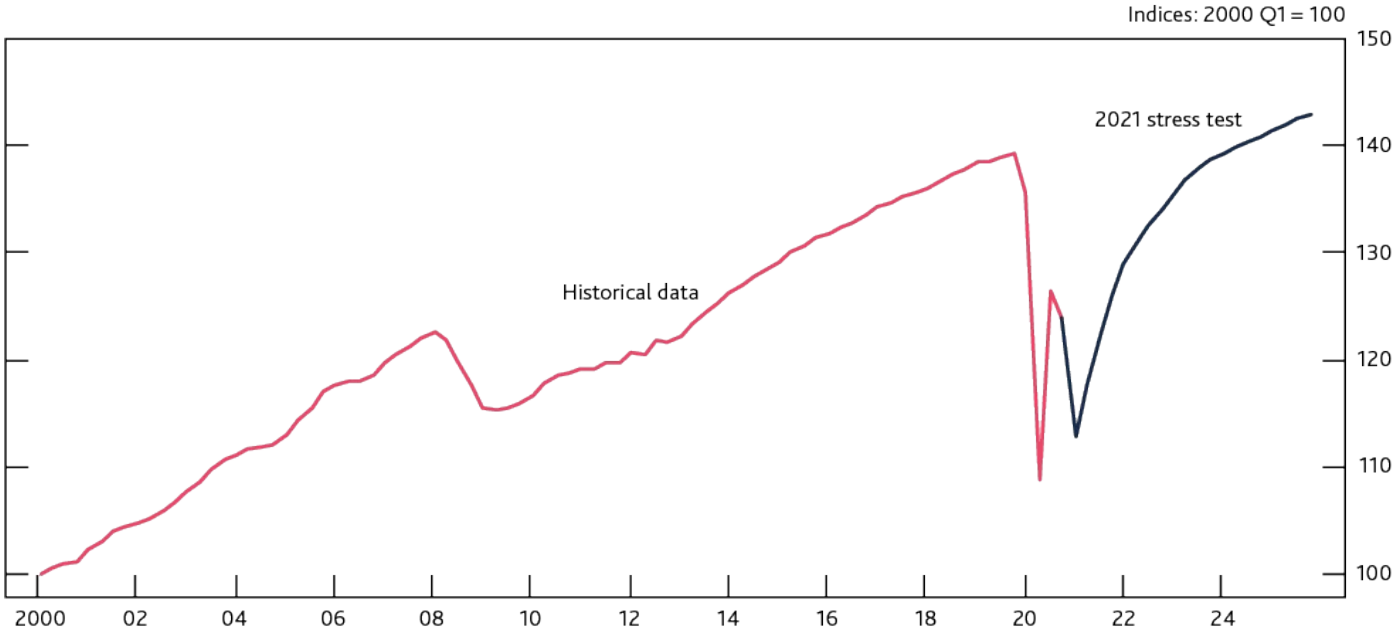
This section describes the important aspects of the 2021 macroeconomic stress scenario in more detail. It includes a description of some aspects of the scenario not included in the set of published stress macroeconomic variable paths. This should help guide stress-test participants in generating their own stressed projections for those aspects. As in previous tests, the stress scenario spans a five-year period, beginning in 2021 Q1 and extending through to 2025 Q4. However some of the stressed metrics described below also include the impact of the current 2020 stress.

4.1: The domestic stress

UK output contracts by a further 9.0% in 2021 Q1 (Chart 4.1). Together with the falls already observed in 2020, the cumulative GDP loss over the period 2020 to 2022, relative to a pre-Covid baseline based on projections in line with the January 2020 MPR, equates to 37% of 2019 GDP. This compares against a three-year cumulative loss of 22% in the November 2020 MPR. **Unemployment** rises by 5.6 percentage points beyond 2020 Q4, peaking at just under 12% and averaging a little under 9% between 2020 and 2022 (Chart 4.2). While GDP growth turns positive and unemployment starts to fall back after this, trend growth stays persistently below where it was pre-Covid, as productivity growth remains weak.

The weakness in employment feeds through into sustained weakness in **property prices**. Both UK residential property prices and UK commercial real estate (CRE) prices fall by around 33% over the course of the stress scenario. The sharp falls in UK CRE prices reflect current stretched valuations in prime offices, and significant structural headwinds to demand in the retail and non-prime office segments of the market.

Chart 4.1: UK GDP falls by 9% in the first quarter of the stress scenario
Level of UK GDP

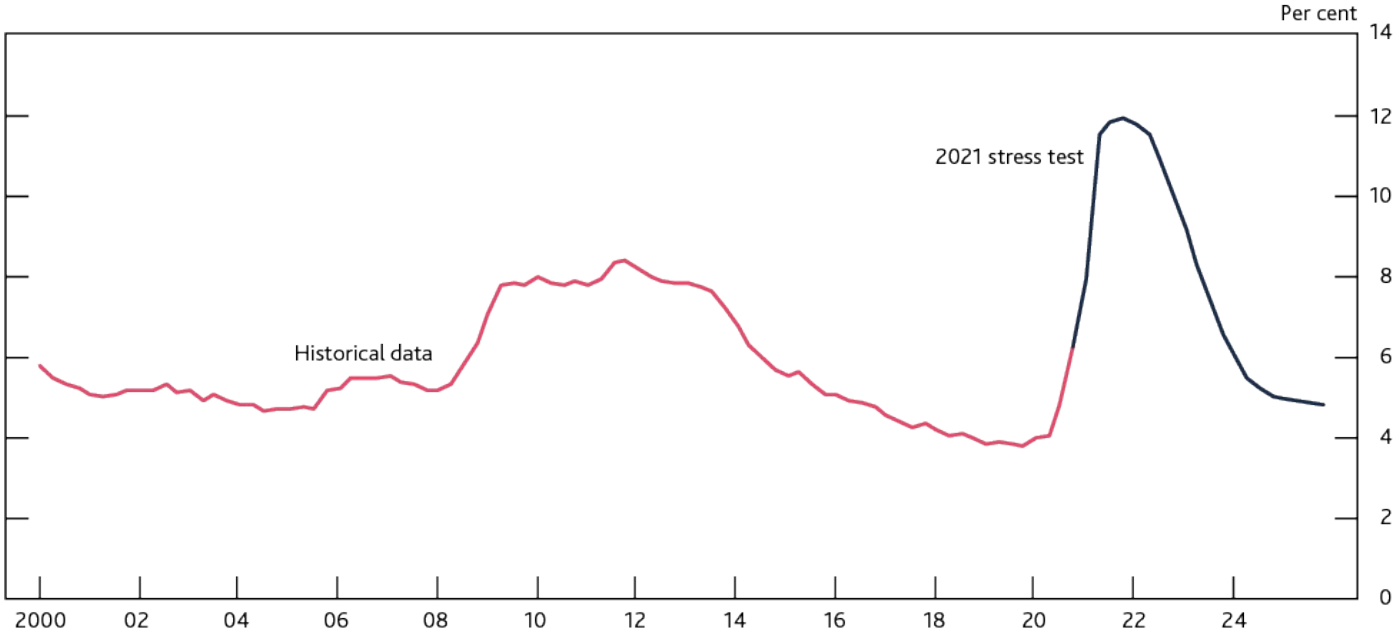


Sources: Bank of England, ONS and Bank calculations.

As the economy further weakens, **nominal household income** and **corporate profits** fall, contracting by 3.2% and 16.7% respectively in the first year of the stress scenario.

UK inflation remains at 1% or lower in the first half of the scenario, troughing at 0.2% in the second half of 2022. It then begins to rise again, reaching target by 2025.

Chart 4.2: UK unemployment rises to a little under 12%
UK unemployment rate



Sources: Bank of England, ONS and Bank calculations.

The path for **Bank Rate** is assumed to follow the same trajectory as the market-implied path of the November 2020 MPR. As a result it turns negative in 2021 and remains low for the duration of the stress scenario. Similarly, longer-term interest rates, such as the 10-year gilt rate remain low, at under 0.9% for the duration of the stress, again in line with the market-implied path.

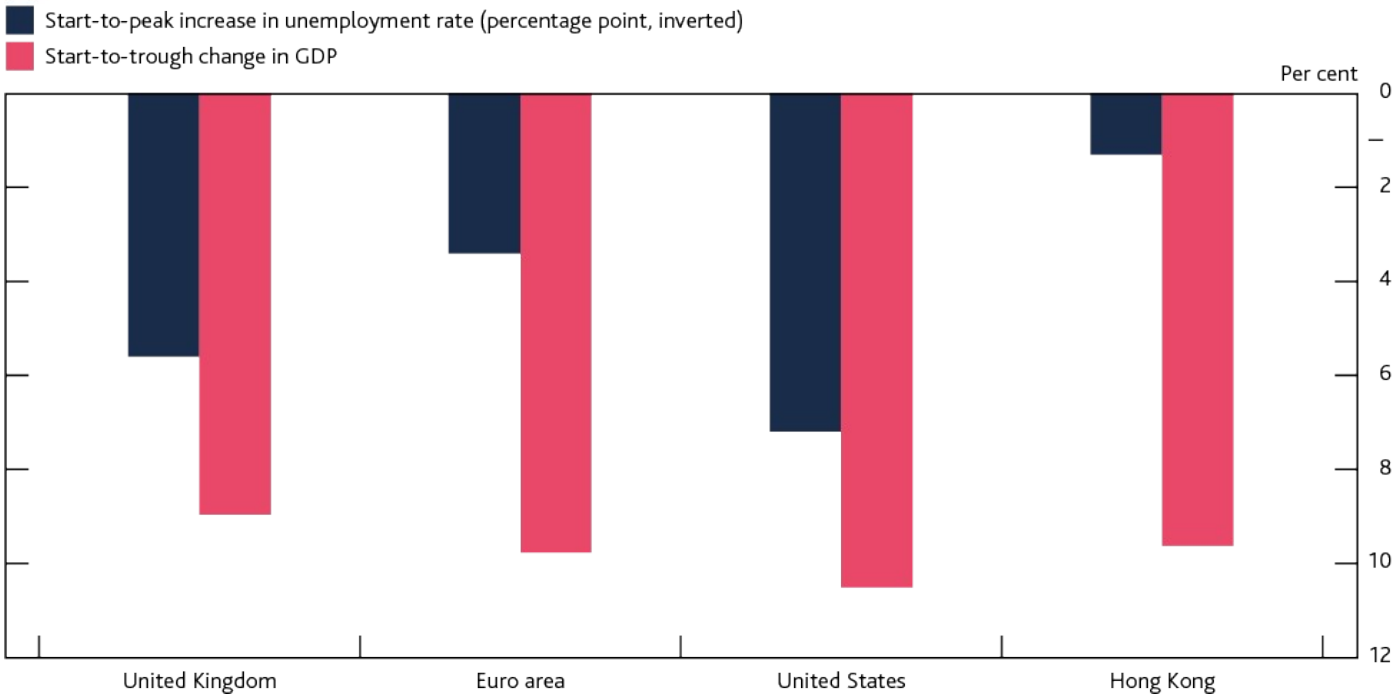
Banks' **wholesale funding spreads** also rise materially, and this spills over into retail funding costs as well. For example, five-year senior unsecured bond yields rise by more than 2 percentage points relative to risk-free rates over the first year of the stress, before falling back.

4.2: The global stress

Weak demand spills over international borders. World trade is very weak in the first two years of the scenario with import volumes falling by just over 18% at the beginning of 2021. Global output falls by 9.6% in 2021 Q1 as economies around the world experience severe and synchronised slowdowns over the course of the scenario (Chart 4.3). The cumulative fall in world GDP over the three years from 2020 to 2022, relative to a pre-Covid baseline, equates to 31% of 2019 GDP. Growth resumes in the second quarter of 2021 and the year-on-year quarterly growth rate averages around 5% over the final four years of the scenario.

Euro-area GDP contracts by 9.8% in 2021 Q1. Year-on-year quarterly GDP growth then averages a little over 3% in the final four years of the scenario. Euro-area unemployment rises by 3.4 percentage points to peak at 11.7% in the second half of 2021, before falling to 8.5% by the first quarter of 2025. Headline euro-area inflation is negative in 2021, reflecting weaker demand and lower commodity prices. It does not rise above zero until the second half of 2022. It remains under 2% for the duration of the scenario. Residential property prices fall by 25% across the euro area, while CRE prices fall by 30% (Chart 4.4).

Chart 4.3: There is a synchronised fall in global output with accompanying increases in unemployment
Start-to-trough falls in GDP and increases in unemployment

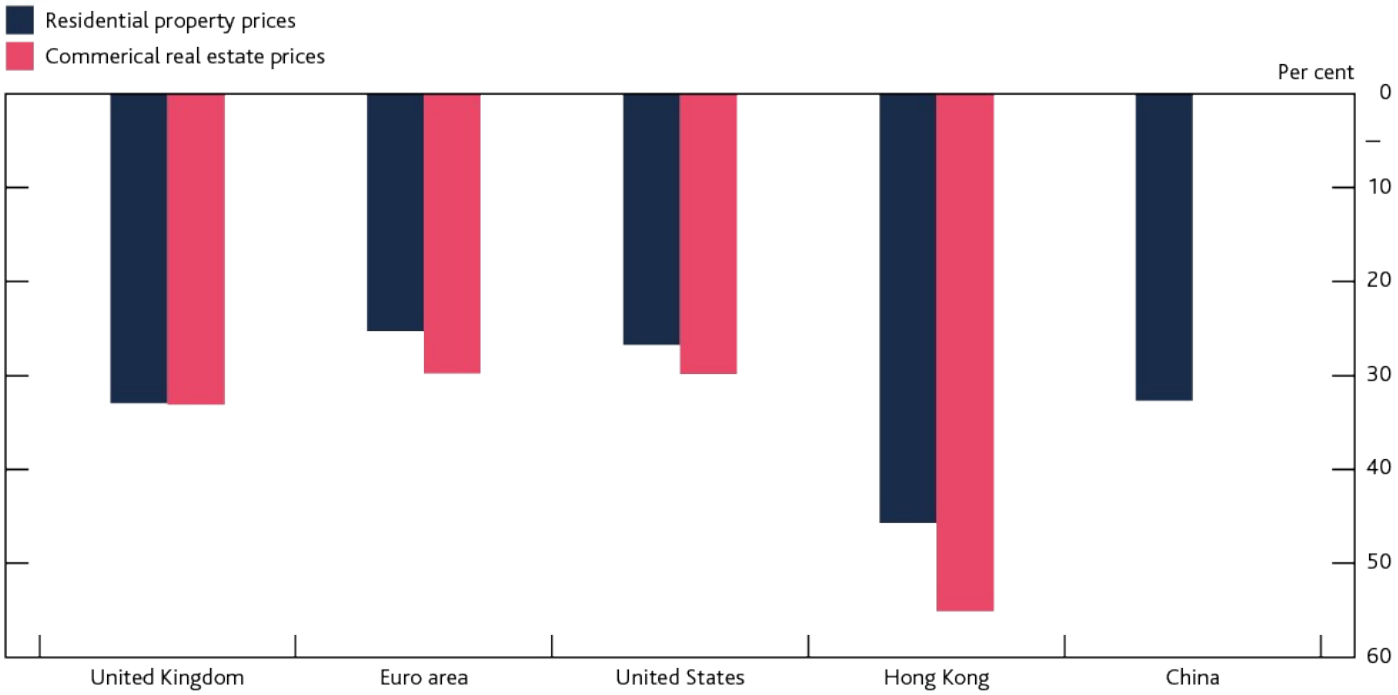


Sources: Bank of England and Bank calculations.

US GDP contracts by 10.5% in the first quarter of the stress scenario, while unemployment peaks at just over 15%. Growth returns in 2022 and the year-on-year quarterly growth rate averages a little over 4% in the final four years of the scenario. On a start-to-trough basis, US residential property prices fall by almost 27%, while CRE prices fall by around 30%.

Overall US corporate profitability falls and the cost of corporate credit rises. Highly leveraged corporates and those involved in the oil and gas extraction industry are among the most severely affected, given the weakness of commodity prices in the stress.

Chart 4.4: Property prices fall across the world
Start-to-trough falls in residential and CRE property prices (a)



Sources: Bank of England and Bank calculations.

(a) Due to a lack of reliable historical data, the Bank does not publish a projection for Chinese CRE prices.

China's GDP falls by a little under 10% in the first quarter of the stress, before recovering. It ends the five-year scenario on an annual growth rate of more than 5%. The contraction in output is accompanied by a drop in residential property prices, which fall by 30% by the second quarter of 2022.

The slowdown in Chinese economic activity is associated with a weakening in household income growth. Nominal Chinese household income growth slows from 8.7% at the end of 2020 to 1.6% by 2021 Q2.

Hong Kong's output contracts by 9.6% in 2021 Q1. Residential and commercial property prices are assumed to fall by 46% and 55% respectively. Hibor, remains low, averaging a little under 0.8% over the course of the stress scenario.

Economic activity slows in **Singapore** and **India** as part of a broad-based downturn in growth across Asia. Singaporean GDP contracts by 9.4% and Indian GDP by 8.2% in the first quarter of the stress scenario.

For **emerging market** economies more generally, falls in output are more severe in countries that are exposed to vulnerable sectors and more reliant on tourism, high oil prices and/or have greater dependency on external finance. While growth resumes later in 2021, the recovery in these countries is delayed.

Weak global demand conditions cause **commodity prices** to fall. Oil prices fall sharply from US$41 per barrel in 2020 Q4 to US$21 per barrel in the first quarter of 2021. They then begin to recover, ending the scenario at a little under US$40 per barrel. Other commodity prices also fall and remain weak throughout the scenario.

The global stress causes financial market participants' perceptions of risk to increase, and their risk appetite to diminish. **Credit risks** rise in a number of markets. Investment-grade US corporate bond spreads more than double; increasing from just over 130 basis points in 2020 Q4 to around 275 basis points by 2021 Q2. High-yield US corporate bond spreads rise from 435 basis points to 914 basis points over the same period. An ongoing expectation from market participants that markets remain functional despite the broader macroeconomic stress means there is only a small rise in liquidity risk premia and this limits the increase in bond spreads.

Measures of **market volatility** also rise, with the VIX peaking at a quarterly average of almost 38 during the first half of 2021. This is slightly higher than the 2020 quarterly average peak, but lower than what was observed during the global financial crisis.

Glossary

ACS – Annual cyclical scenario.

CET1 – Common equity Tier 1.

CRE – Commercial real estate.

FPC – Financial Policy Committee.

FSR – Financial Stability Report.

GDP – Gross domestic product.

IFRS 9 – International Financial Reporting Standard 9.

IMF – International Monetary Fund.

MPC – Monetary Policy Committee.

MPR – Monetary Policy Report.

PRA – Prudential Regulation Authority.

PRC – Prudential Regulation Committee.

RWA – Risk-weighted asset.

VIX – CBOE Volatility Index.

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1. See July 2019 FSR.
2. See FSR, 'Results of the 2019 stress test of UK banks' for further details.
3. As set out in 'The Bank of England's approach to stress testing' the purpose of publishing a baseline alongside the stress scenario is to allow the Bank to form a view of resilience under a central case. The decision to not require participating banks to submit baseline projections in the 2021 solvency stress test is twofold: (1) the uncertain economic outlook means a baseline scenario is less useful as a 'central case' than in normal years; and (2) omitting baseline projections for the purposes of the 2021 exercise will help facilitate the change to this year's timetable as well as ongoing operational challenges within participating banks.
4. For further details of the hurdle rate framework used in the 2019 stress test, see 'Key elements of the 2019 stress test'.