



# Financial Risk Management: Practice and Governance in the COVID-19 Crisis

A White Paper

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## About Promontory

Promontory is a leading provider of strategic planning, risk management, governance, regulatory compliance, and operational transformation services to the financial services industry. Founded in 2001 by Chief Executive Officer Eugene A. Ludwig — a former U.S. comptroller of the currency and vice chairman of Bankers Trust/Deutsche Bank — Promontory was acquired by IBM in 2016. We operate today as an independent IBM subsidiary, with offices across North America, Europe, Asia, and Australia.

Promontory's clients include the largest 50 financial institutions globally, the largest 50 financial institutions in the U.S., the top 10 banks and largest insurers in Europe, the four largest financial institutions in Australia, the three largest financial institutions in Japan, and the largest financial institution in China. They also include the largest central banks and regulatory agencies in the U.S, Europe, Canada, Japan, U.K., and Australia.

Our unique domain expertise, combined with IBM's world-class technology and business transformation capabilities allow us to resolve challenging national and cross-border issues in banking, insurance, securities, commodities, financial instruments, and capital markets. Promontory professionals bring to bear their broad and deep experience gained from decades of leadership at Fortune 100 corporations and regulatory authorities. Our ability to combine the expertise of former senior financial services executives and regulatory officials — including from several agencies that regulate benchmarking participants — sets us apart from other consulting firms.





# 1. Introduction

While every crisis has a unique set of drivers, the COVID-19 pandemic is forcing firms to face challenges in an extraordinarily unfamiliar environment. The present situation took months to unfold, but it nonetheless surprised businesses and governments around the world. The U.S. and other western economies have seen a profound and rapid decline in general economic activity, with U.S. gross domestic product (GDP) dropping at nearly a 33% annual rate during the second quarter and the unemployment rate soaring to 14.7% in April 2020 — a level not seen since the Great Depression.<sup>1</sup>


Some businesses undoubtedly have seen growth opportunities, with select technology and large-cap stocks bouncing back from late March 2020 lows and, in some cases, returning to levels near or above pre-pandemic highs. It remains to be seen whether the reopening of the real economy will continue at a pace as strongly as the stock market implies, and if so, whether business in the hospitality, restaurant, hotel, transportation, sports, and entertainment sectors will return to anything near their pre-pandemic activity.

In general, we expect that there will be real and lasting impacts from the pandemic — even if a vaccine or effective treatment is developed. The displacement has been so significant that some businesses and individuals will not recover. As a result, we expect that most banks will sustain substantial losses from the decline in economic activity and rise in unemployment. The peak in credit-related stress may not be reached before the third or fourth quarter 2020 when we also expect retail and wholesale defaults to rise. The total level of bank losses could rise even further if there are additional waves of the pandemic. Though banks around the globe were generally well-capitalized before the crisis, we think they will be forced to tap into their capital and / or liquidity buffers, potentially at higher rates if the severity of the crisis deepens or continues beyond current expectations.

Globally, bank supervisors and regulators have indicated that now is the time for banks to support their clients, and they have suggested that banks should make prudent use of the liquidity and capital buffers they built up following the Great Recession. Recently, U.S. supervisors indicated specific actions and processes that banks should be prepared to take to maintain prudent levels of liquidity and capital. On June 23, federal and state banking agencies issued examiner guidance to promote consistency and flexibility in the examination of financial institutions, considering the ongoing impact of COVID-19.<sup>2</sup> On June 25, the Federal Reserve released the results of the Dodd-Frank Act Stress Tests for 33 banking institutions along with an aggregated capital stress analysis for different pandemic-related scenarios.<sup>3</sup> The pandemic stress analysis indicated that a quarter of banking institutions would be near or below capital minimums under the most severe scenario, defined as a W-shaped recovery. As a result, the Federal Reserve is requiring banks to resubmit capital plans in the third quarter of 2020, with the instruction that the new plans should more fully reflect COVID-19 crisis stresses. Additionally, the Federal Reserve suspended share buybacks and capped third-quarter dividends at the higher of either second-quarter dividends or the average quarterly income for the previous four quarters.

It is our view that in the not-too-distant future, supervisory assessments will increasingly focus on whether bank management took action during the crisis that reflected strong risk management and governance approaches, and that considered the crisis's impact on the firm's business actions, risk appetite, and strategy. Supervisors are likely to focus on capital, loss provisioning, and liquidity processes — specifically on the quantitative and qualitative aspects of provisioning for the allowance for credit losses (ACL) or the allowance for loan and lease losses (ALLL), stress testing results, and measures of capital and liquidity adequacy. These estimates are crucial to strategic and risk decisions about the future growth and risk profile of banking organizations.

To get a sense of the scale of these issues, it is instructive to review first-quarter 2020 ACL provisions reported by U.S. banks. The provisions reflect the early response to the COVID-19 pandemic with large-scale closures of non-essential businesses and other disruptions only beginning in March 2020. Excluding the impact of moving toward provisioning based on current expected credit losses (CECL), first-quarter earnings reports from the four largest banks — JPMorgan Chase, Bank of America,



Citibank, and Wells Fargo — together show a 57% jump in the aggregate ALLL from the fourth quarter of 2019.<sup>4</sup> There was also wide variation across the individual banks in their first-quarter loss provisions, with levels ranging from 15% to 77%.<sup>5</sup> We believe that substantially different qualitative judgments are a major factor explaining the wide variation in ACL growth.<sup>6</sup>

The COVID-19 pandemic has produced a similar effect outside the U.S. The U.K.'s largest bank by assets, HSBC, reported first-quarter expected credit losses (ECL) soared to \$3.0 billion, a five-fold jump from the \$600 million a year earlier. During the second quarter, the figure increased even further, rising to \$3.8 billion compared with \$500 million in 2019. The bank attributed both spikes to COVID-19.<sup>7</sup> BNP Paribas, the Eurozone's largest bank by assets, reported that the cost of risk (a metric reflecting provisions for ECL) soared 85% in the first quarter<sup>8</sup> and 133% in the second quarter<sup>9</sup> from a year before due to the pandemic and worsening economic conditions. Likewise, Credit Agricole Group reported first- and second-quarter cost-of risk growth of 176%<sup>10</sup> and 135%,<sup>11</sup> respectively.

Given the extraordinarily steep decline in economic activity, as well as the unique circumstances generating the shock to the economy, it's our view that expert judgment will have an unusually large role in models affecting bank financials, business decisions, and risk assessments. It will be critical for organizations to have well-governed processes for generating financial estimates to properly manage risk, make sound strategic decisions, and maintain the confidence of investors and regulators. In this paper, Promontory outlines three particularly important actions that financial institutions should take when considering their current and future financial risk management activities:

- Assess and qualitatively address the limitations of existing financial risk measures using expert judgment and tools such as sensitivity analysis and benchmarking
- Develop stress tests and scenarios that are relevant and reflect the crisis
- Ensure a robust governance approach adequate to address the unique challenges of the current crisis, including a clear analysis of the sensitivity of estimates to key assumptions

## 2. Assess, Adapt, and Improve Risk Measurement

Most financial institutions we talk to have established systems of quantitative models for provisioning, stress testing, and liquidity and capital analysis. These models would have been validated as fit for purpose given the facts and data at the time of the models' development. However, the pandemic's global economic consequences are profound and unlike any experience embedded in current models we've seen. More specifically, we believe many models are likely to not work as expected for at least two reasons. First, the drivers of the current economic stress are very different from those previously observed in magnitude, timing, duration, and sectoral impact. Second, quantitative models of risk that link drivers and outcomes calibrated to past experience are not likely to forecast outcomes properly when applied to current, COVID-driven macroeconomic scenarios, as some macroeconomic drivers are moving in ways not observed in the last recession. For example, stock market values haven't followed a similar trajectory.

Despite these limitations of current models and historical data, financial institutions still need to generate estimates of the crisis's impact on business outcomes for internal and external reporting purposes. In addition, firms should generate a range of outcomes using scenario analysis in order to take actions and effectively manage risk during the crisis.

### 2.1 Qualitative Estimates

Many firms we talk to, especially those firms subject to stress-testing requirements, have developed a standard process for estimating risk outcomes when quantitative models are unavailable or unreliable. These firms develop qualitative estimates with a transparent thought process for factors that drive outcomes, explicit assumptions with sensitivity analysis, and empirical analysis



of available data and benchmarks — all of which include an important element of expert judgment. Sound practice for qualitative estimates of risk outcomes follows these principles, but we see the particular form vary, often including the following types:

- **Model adjustments:** The model limitation is addressed within the modeling framework by judgmentally adjusting a model parameter or assumption
- **Model overlays:** The model output is used as the starting point in that the model limitation is addressed by judgmentally adjusting a model output. Model overlays are useful for addressing known model limitations in cases where the impact of the limitation can be quantified
- **Qualitative approach or estimate:** The approach steps away from the quantitative model and judgmentally develops an estimate of risk outcome using the disciplined approach noted in this section

We believe that financial institutions' model governance practices should adapt to the higher levels of model risk presented by the current crisis. To this end, they should take a systematic approach to assessing the reliability of models, using a blend of expert judgment and qualitative and quantitative analysis. This assessment should inform where qualitative estimates should be used to supplement model results and should include the following considerations and tools:

**Assess materiality:** Firms should identify models that are important for the risk outcomes most impacted by the crisis. For example, models assessing consumer lending outcomes for credit loss and provisioning are material for many firms, as we've seen loan portfolios are under pressure from rapidly rising unemployment rates. On the other hand, market risk models may be less important to assess as the financial markets continue to function, albeit with heightened volatility.

**Sensitivity analysis:** For important models, firms should undertake sensitivity analysis around parameter calibrations or modeling assumptions that may be problematic given recent events. This analysis should include assumptions about customer behavior as well as the impact of government actions. For example, sensitivity analysis is useful for sizing the potential effects of government-encouraged forbearance actions in the mortgage market.

**Benchmarking:** Firms should identify models that are sensitive to critical macroeconomic drivers (e.g., the unemployment rate) and assess which drivers are behaving differently than in the past. Although different, comparison to the 2008 financial crisis is still instructive in terms of ranking outcomes. Is the estimate for the current case expected to be better or worse than what we experienced in the last crisis?

**Assess ongoing monitoring results:** Firms should evaluate the information provided by assessing ongoing monitoring and early-warning triggers. For instance, what models are not tracking with data from the early stages of the crisis?

**Evaluate customer feedback and industry intelligence:** Firms should assess business intelligence for indications that model estimates are inconsistent with actual outcomes.


Importantly, firms should ensure strong data collection and analysis as early as possible to monitor developments, enhance qualitative estimations, and develop more quantitative or predictive approaches over time.

We provide several illustrative examples for how qualitative estimates can be constructed. The first example is historical and describes qualitative estimates of mortgage repurchase losses following the financial crisis as large banks and the Federal Reserve conducted the early rounds of stress tests under the Comprehensive Capital Analysis and Review (CCAR). The second example is taken from the current crisis and addresses the calculation of potential losses for a mortgage loan portfolio.

### 2.1.1 EXAMPLE 1: MORTGAGE REPURCHASE LOSSES

As mortgage defaults mounted during the 2008 financial crisis, it became clear that large numbers of mortgages that were originated and sold for securitization had fraudulent or faulty documentation in which the creditworthiness of the borrower or appraised value of the property were misrepresented.<sup>12</sup> Contractually, the buyer of a misrepresented mortgage can force the originator to repurchase the loan. If the mortgage is performing, there is little incentive for the buyer to force the originator to repurchase the mortgage. However, if the mortgage is in default, the buyer can avoid the default credit loss by forcing the





originator to repurchase the loan and absorb the credit loss. Accordingly, as defaults mounted, so rose the threat of forced repurchases for originators. In addition to forced repurchases, originators were also subject to losses from investor lawsuits, which follow a similar logic.

As part of CCAR stress testing, banks had to estimate repurchase and investor lawsuit losses under stress scenarios. At the time of initial supervisory stress testing, the potential for these losses was known, but the repurchase and legal drama was just beginning to play out. There was no firm historical data available to ground statistical loss estimates. Therefore, an approach that combined statistical modeling and qualitative estimates was the only feasible approach for estimating stress losses.

The qualitative estimates involved two steps as follows:

**1** Banks estimated credit losses for the sold loans using existing statistical models that projected future losses over the remaining lifetime of the loans using risk characteristics of the sold loans. This step provided the loss for a loan if in fact it would be repurchased or subject to lawsuit losses.


**2** Banks then used a qualitative or expert judgment approach to project how much of this credit loss would be ultimately put back to the origination bank (whether through contractual repurchase, a settlement agreement, or litigation loss) under stress conditions. Again, in the early rounds of CCAR, there was little relevant historical data and losses realized to that point were small. This step required banks to assemble expert opinions, including from legal staff, on the repurchase and settlement rate for each type of investor class under a stress scenario. The repurchase and settlement rate by loan type was then combined with the modeled losses from step one to calculate stress losses. Sound industry practice includes sensitivity analysis around the judgmental estimates to illustrate the impact of varying estimates. Finally, bank management reviewed the distribution of responses to determine an appropriately conservative estimate for stressed repurchase losses.

### **2.1.2 EXAMPLE 2: MORTGAGE CREDIT LOSSES**

Banks must comply with the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), signed into law on March 27, 2020, that mandates that federally backed mortgage loans follow a consistent payment suspension program.<sup>13</sup> This program allows for customers to suspend payments for up to six months, with the possibility of a further suspension of six months, if they continue to be economically impacted by COVID-19. During the forbearance period, banks will not charge late fees and will not report customers as delinquent to the credit reporting agencies. At the end of the forbearance period, banks are expected to work with customers to determine which customers will have payments deferred for some period of time and which customers will require loan modifications such as adding the suspended payments into the loan and extending the loan term.

We have already discussed why statistical models developed with historical data will not properly capture the impact of macroeconomic drivers on credit losses for this crisis. This lack of comparable historical data is compounded by the specific features of the current forbearance programs. Consequently, banks will need to develop qualitative estimates of mortgage credit losses for ACL and stress testing.





We believe this problem can be thought of as a sequence of proportions determined by data and judgmental assumptions as follows:

1

Banks can use their customer and risk data systems to capture the current proportion of customers who have asked for mortgage forbearance. The data should include available loan information, such as balance, and relevant borrower characteristics, such as credit scores.

2

Credit losses depend on what happens after the forbearance period ends. The next step is to develop judgmental assumptions for the proportion of customers who will recover and make payments after the forbearance period, the proportion who will have payments deferred, the proportion who will require loan modifications, and the proportion who will go into default. These assumptions will need to extend the length of the estimation horizon, as they will vary over time.

3

Banks should use all feasible internal and external data to empirically support the judgmental assumptions and the segmentation of the qualitative estimates. For mortgage obligors who also have deposit and savings accounts, banks have internal data from deposit and savings account balances that is predictive of behavior. For example, obligors with stable account balances are probably in better economic shape than obligors with declining balances. External data such as bankruptcy reporting may be used to empirically inform the judgmental assumptions and estimates, but banks will need to evaluate the current bankruptcy behavior versus what has been observed in the past.

4

Sound industry practice includes sensitivity analysis around the judgmental estimates to illustrate the impact of varying estimates. Bank management should review the qualitative estimates and sensitivity analysis to determine an appropriate estimate for the purpose at hand.

5

Finally, banks should monitor their data on an almost real-time basis to capture changes in customer behavior and make frequent updates to qualitative estimates as they learn more about COVID-19's impact on customer behavior.



## 2.2 Additional Examples of Qualitative Adjustments and Estimates

### 2.2.1 CREDIT RISK MANAGEMENT

**Sector-specific credit shocks:** Within a particular loan portfolio, the COVID-19 impact may differ across sectors in ways that are not adequately reflected in model output. For example, firms may find that some commercial industry sectors (e.g., the technology sector) are performing reasonably well. However, we have seen that the travel and hospitality sector has been hit especially hard by the crisis.<sup>14</sup> Firms can improve the quality of portfolio loss estimates by developing sector-specific qualitative estimates for sectoral impacts that models don't properly capture.

**Credit-mitigating programs:** Firms may need to develop qualitative estimates to account for the effect of government programs on credit metrics. For example, the U.S. Small Business Administration is guaranteeing loans made by financial institutions to small businesses through the Paycheck Protection Program (PPP). New government guarantee programs require firms to develop qualitative estimates in place of model results.

### 2.2.2 MARKET RISK MANAGEMENT

**Hard-to-value assets:** The use of judgment is common when measuring market risk exposures of level 3 assets, the values of which depend on unobservable inputs. For example, a valuation multiple for a private equity investment is an unobservable input. Banks around the world hold substantial amounts of hard-to-value level 3 assets. For some large banks, the value of such assets exceeds 50% of their capital.<sup>15</sup>

The pandemic has made the valuation of level 3 assets more challenging. Mark-to-model approaches have to be adjusted to account for the current pandemic environment. For example, commercial property is typically valued using the discounted cash flow method. The latter requires a bank making assumptions about the timing of business reopening, occupancy, rent levels, and discounting, among other factors. Using expert judgment is unavoidable, but it has to be well reasoned and documented. This forces a discussion about potential risk drivers and should allow banks to understand their exposures better and respond to economic events more rapidly.

### 2.2.3 LIQUIDITY RISK MANAGEMENT

**Business strategy changes:** Treasurers will need to work closely with business partners to understand how changes to business strategies — deployment of government programs and lending collections — impact projected cash flows. For example, judgment will be required to estimate the timing and volume of loan disbursements, fundamental shifts in sales and repayment rate dynamics, and outcomes of collections initiatives.

**Customer deposit behavior:** Similarly, qualitative estimations will be important in modeling customer deposit behavior given the unprecedented circumstances driving the availability and need for cash for companies and individuals. For example, deposit modeling will require assumptions to be made regarding how customers are accessing government programs and how to account for the likely temporary nature of any associated deposits, which may have previously been modeled as core and stable.

**Customer borrowing behavior:** Similarly, customer deposit behavior will also be impacted and will require close monitoring and qualitative estimation. For example, cash-flow modeling will require assumptions regarding how customer demands for cash will translate into higher draws on credit lines — including the duration until payback — as well as the extent to which customer discretionary spending reductions impact lending levels.

**Asset values:** Firms may need to develop qualitative approaches to estimating effects on asset values that may warrant changes to the haircuts modelled for liquidity-planning purposes.



## 2.3 Stress Testing

Stress testing became part of the standard risk management toolkit of regulators and financial institutions after the 2008 financial crisis. Regulators implemented capital and liquidity stress tests to restore the public's confidence in the financial system and promote financial stability. In the U.S., these tests demonstrated that financial institutions were able to withstand even severe economic conditions.<sup>16,17</sup> In addition, supervisors introduced a requirement for banks to have robust, repeatable, forward-looking, and flexible stress-testing programs that consider material, unique risks, and that informs decision-making.<sup>18</sup> The mandated internal capital and liquidity stress testing forced financial institutions to consider all sources of risk that could be missed by top-down regulatory stress testing. We saw that internal stress testing further restored confidence in financial systems around the globe and contributed to strengthen banks' risk management capabilities.

An important building block of a stress-testing program is a set of scenarios, with each scenario reflecting the evolution of the key macroeconomic and financial risk factors under an adverse business environment. Scenarios can be historical, reflecting previously realized stresses, or hypothetical, with specification informed by expert judgment or modeling. Historical scenarios are "adaptations" of past stressful events, such as the 2008 crisis, to current economic conditions. While the historical scenarios help banks not repeat past mistakes, the hypothetical scenarios allow them to prepare for the unknown. U.S. regulators have incorporated these scenarios into their annual capital adequacy stress tests.<sup>19,20</sup> Additionally, institutions use reverse stress testing to understand scenarios that breach regulatory ratios or that lead to insolvency or illiquidity. The aim of reverse stress testing is to identify potential new vulnerabilities, which is especially important during a pandemic.

The scenario severity is measured relative to a baseline scenario, which, in our view, is straightforward to design in normal times but challenging during a pandemic-triggered crisis. Thus, in the current environment, firms must stress test an already stressed environment, one which has the potential to evolve into the most severe crisis experienced in generations.

Plausibility and severity are key characteristics of a scenario. A plausible scenario relies on observed or theoretical relationships between risk factors and economic outcomes, like revenues, profits/losses, and available capital. Severity is related to plausibility: The more severe a scenario is, the less plausible it is. However, an implausible scenario may not be severe. For example, a scenario assuming an unusual correlation between sectors may be implausible but not severe. This distinction is important in a pandemic environment when the expected relationships are broken; what is plausible needs to be redefined and explored through experimentation.

Banks and regulators now have more than a decade of experience building and using robust stress testing frameworks, including the use of custom scenarios. For example, in the U.S., banks subject to the capital stress-testing regime must develop models or other approaches to forecast or estimate balances, losses, and available capital over the stress horizon. A numerical output of the exercise is a set of capital ratios demonstrating a bank's ability to survive and continue to lend in severely adverse economic environments. Banks can leverage this stress testing infrastructure in today's challenging environment and turn it into a strategic instrument.





### 2.3.1 SCENARIO DESIGN PRACTICE

Institutions we have worked with have typically implemented the following scenario design practices:

1

**Institution-specific scenario design:** The number and sophistication of the scenarios must be tailored to bank size and complexity. Under the Dodd-Frank Act (DFA) and Capital Plan Rule,<sup>21</sup> large bank holding companies are required to develop at least one stress scenario tailored to the unique characteristics of the bank holding company, while the largest and most complex institutions must develop multiple scenarios. The DFA and Federal Reserve's enhanced prudential standards<sup>22</sup> require institutions to maintain at least three liquidity stress scenarios, while large and complex institutions must have more. The regulators also expect banks to develop additional scenarios if financial conditions or risk profiles deteriorate — as is the case with this pandemic.

Large banking organizations we talk to have considerable experience in identifying the risks that are most salient in terms of their specific exposures, risk appetite, geographic footprint, operational controls, and other important considerations. Banks should use the existing risk identification, scenario design, and modeling processes to understand how the pandemic could affect their institution. These banks already know their exposures to specific parts of the economy (auto, personal finance, small business, trading, etc.) and their funding sources and can readily assess which parts of their portfolios are most at risk while taking into account governmental support and public response.

2

**Scenario narratives:** Institutions need clear narratives linking the bank's specific vulnerabilities, portfolio, and strategies to specific sources of risk. Banks must also involve knowledgeable personnel from the lines of business, treasury, finance, modeling teams, and risk management in scenario development. During the pandemic, it is also important to maintain a clear narrative for the baseline scenario.

**Identifying and understanding specific narratives:** Why certain events and circumstances can occur and in which combination and order are both critical when building stress scenarios. For example, drivers might include operational mistakes (not following bank policies), regulatory issues (exposure of personally identifiable information), credit losses (an event in the bank's geographic area that results in losses to specific portfolios), and loss of funding (capital market disruption).

3

**Scenario governance and challenge:** Even the best scenarios need to be revised or replaced and the pandemic will only increase the need to do so. Two of the Basel Committee on Banking Supervision's (BCBS) stress-testing principles, published in 2018, are important in this regard.<sup>23</sup> First, firms need strong governance for their stress-testing approaches (principle 2). Second, the stress scenarios need to be challenged (principle 8). An effective challenge is essential in a pandemic environment when relying on judgment is prevalent.



## 2.3.2 UNIQUE ASPECTS OF MARKET RISK AND LIQUIDITY SCENARIOS

### MARKET RISK

U.S. banks with gross trading assets of 10 percent or more of total consolidated assets or \$1 billion or more are subject to the market risk rule (MRR), the U.S. implementation of the BCBS's market risk framework, and must perform quantitative "market risk stress testing" at least monthly, with large institutions testing weekly or daily.<sup>24</sup> Additionally, institutions with significant market risk exposures must have the ability to adjust scenarios and perform stress testing on an ad-hoc basis to be able to respond to rapidly changing market conditions, like COVID-19.

Under the MRR, banking organizations must perform stress testing of market risk exposures with unique regulatory expectations to scenarios. They must:

- Capture significant non-linearities within relevant covered positions
- Consider the potential need to liquidate positions during periods of reduced market liquidity
- Stress structured products or leveraged positions at the level of the underlying positions or risk factors
- Consider tail dependence between products and product types
- Consider reverse stress testing, i.e., find a combination of factor movements that would result in the greatest market losses

These requirements, in our view, are especially important during the pandemic. Large market-price movements have already led to significant changes in the value of equity derivatives, exposing the inherent non-linearities of institutions' portfolios. The market liquidity of treasury and mortgage-backed securities is also below normal and yields on treasuries have reached historical lows. The observed stressed correlations are at odds with the typical assumption that prices of financial assets move in tandem.


While many sectors have seen great losses, the pandemic has also generated big winners, e.g., technology firms. We have seen that this unusual economic environment has led some institutions to report large market-risk-related losses and violate their value-at-risk (VaR) thresholds more frequently than during 2008's Great Recession. In the first quarter of 2020, Wells Fargo saw its market risk VaR capital charge increase to \$476 million, or 71% above the previous quarter's level.<sup>25,26</sup> In Europe, BNP Paribas reported that the equity-market movements led to multiple breaches of its VaR thresholds.<sup>27,28</sup> These developments prompted the European Banking Authority to suggest that the national authorities could adjust the VaR and stressed VAR-based requirements.<sup>29</sup>

### LIQUIDITY

Institutions subject to liquidity stress-testing requirements<sup>30,31</sup> must conduct stress tests to assess the potential impact of at least three mandated liquidity stress scenarios — adverse market, idiosyncratic, and combined — on their cash flows, liquidity position, profitability, and solvency. Stress tests must take into account the current liquidity condition, risks, exposures, strategies, and activities. Liquidity stress testing must be performed at least monthly or quarterly, depending on the size and complexity of the firm. The largest institutions are expected to perform stress testing daily.

The analysis is performed using a set of complementary hypothetical scenarios that capture multiple liquidity risks and potential stress events. The core set of liquidity scenarios should include the following types:

- Idiosyncratic (bank-specific), systemic (market-wide), and combined
- Moderate and severe



Each liquidity stress test is expected to include at least overnight, 30-day, 90-day, and one-year planning horizons, and any other planning horizons that are relevant to the firm's liquidity risk profile. In addition, each liquidity stress test scenario is expected to clearly identify initial trigger events and distinguish between third-party or management actions that are discretionary versus non-discretionary. For example, the analysis should clearly identify whether actions that generate or control liquidity flows — such as deposit withdrawals, collateral calls, or termination of lending — are statutorily required or if there is a degree of discretion, which requires more detailed analysis and support.

The primary objective of core liquidity stress test scenarios is to provide management with sufficient information to assess whether the firm remains within the board-approved liquidity risk appetite and maintains adequate liquidity to withstand the simultaneous occurrence of multiple low-probability, high-impact stress events.

In our view, firms that have effectively implemented and managed internal liquidity stress tests that meet existing expectations should be better positioned in the current environment. In particular, the existing expectations require banks to incorporate a certain degree of qualitative judgment and conservatism in their stress test to account for limitations in historical data (as an example, the positive impact of public-sector intervention will not be reflected) as well as to ensure liquidity buffers incorporate an assumption that a bank will continue lending in challenging environments. On balance, dynamics within the current environment — which includes customer draws on liquidity but also includes offsets, such as a flight to quality and pullback in economic activity — may result in liquidity impacts that are more moderate than those addressed among the suite of pre-existing, core stress tests most banks employ.

Nevertheless, close monitoring and refreshed cashflow forecasts will be critical to managing day-to-day liquidity demands, including intra-day obligations, and in the mid- to long-term liquidity, stress testing, and contingency planning programs will need to be updated to incorporate learnings from this pandemic event.

In addition, it is becoming increasingly important that financial institutions consider the interplay between capital and liquidity analysis. For example, if a capital analysis yields results that fall below well-capitalized thresholds, the bank should evaluate liquidity implications and develop contingency plans to address the loss of funding sources this fall could trigger (e.g., loss of access to brokered deposits).

### **2.3.3 SCENARIOS FOR THE COVID-19 WORLD**

The post-2008 banking reforms required that most banking organizations over \$10 billion in assets have robust stress-testing and capital and liquidity planning processes, including scenario governance procedures.<sup>32</sup> Recent events, such as the prospect of negative interest rates and, more recently, negative prices for oil — have prompted banks we are in conversations with to consider previously unthinkable scenarios.<sup>33,34</sup> While the principles of scenario design remain the same as before the pandemic, it is our view that it's worthwhile to think about how these principles should be applied in a pandemic world.

The main requirement of a stress scenario is that it represents extreme, but plausible, paths of key macroeconomic and financial variables in the current crisis, along with qualitative responses (or overlays based on expert judgment) describing the impact on bank balance sheets. For example, the unemployment rate scenario could be characterized by its peak level, its transition to that peak level, and the speed of transition back to the long-run "normal." Together, these provide sufficient information to describe a specific path of the unemployment rate that could be plausible or not. However, the severity is not the only dimension along which one could distinguish between the plausible and implausible scenarios. Its uniqueness is another key dimension; a double-dip unemployment scenario could be considered implausible in a typical recession, but not during a pandemic.

Larger banking organizations we talk to have in-house scenario design teams and macroeconomic forecasting capabilities. Smaller organizations are likely to rely on third-party macroeconomic forecasts from vendors. In either case, banking organizations should carefully assess the plausibility and severity of these scenarios, taking into consideration the organization's own geographic footprint, products, services, and client base. A one-size-fits-all severe scenario is not suitable in the conditions created by the pandemic. We believe banks relying on third-party scenarios should assess to what degree the scenarios apply to them and whether a qualitative overlay is needed.





### 2.3.4 PLAUSIBILITY

The investigation of an economic scenario's plausibility is a thought experiment, informed by examination of the level, trend, volatility, and co-movement of factors driving the potential realization of losses.<sup>35</sup> When developing new scenarios, banks often start with a scenario that stresses a small number of factors or modifies an existing scenario in a few dimensions. With a small number of risk drivers to consider, scenario likelihood could be estimated and used as a measure for plausibility. For example, the GDP and S&P 500 index could be used to represent the real and financial side of the economy, while allowing the remaining risk drivers to follow their "expected" paths. It is tempting to use likelihood broadly, but with many risk drivers, the fidelity of the statistical models is low (i.e., the confidence intervals around the proposed scenarios are wide, and plausible scenarios must be defined using expert judgment).

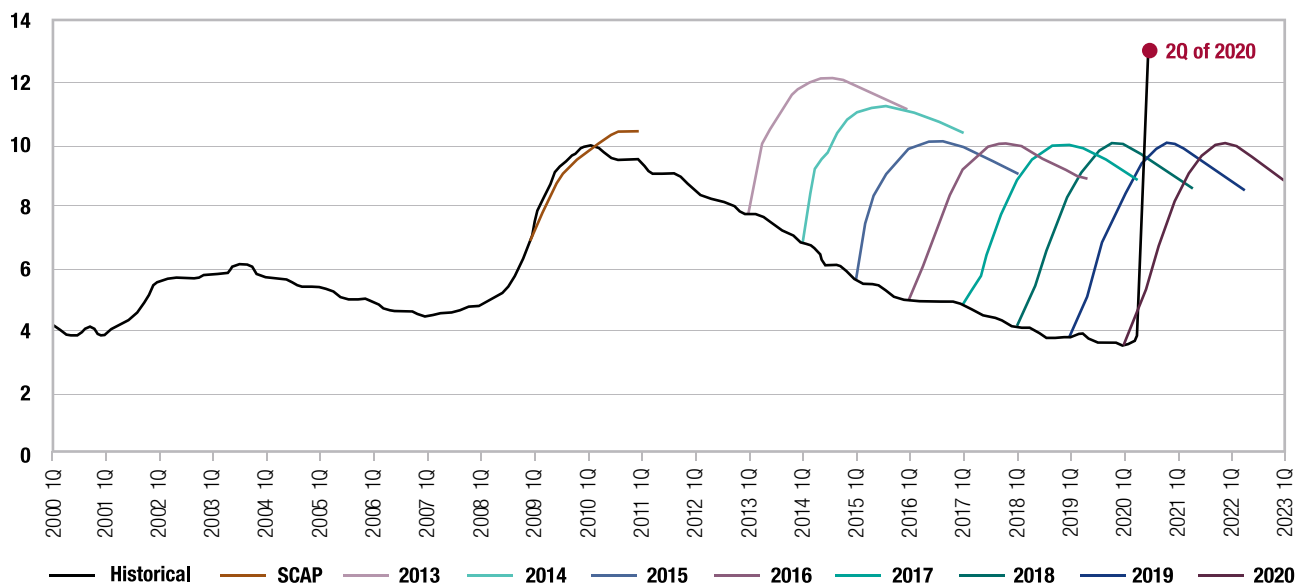
During the latest round of supervisory stress testing released in June 2020, the Federal Reserve considered three alternative severe stress scenarios: V, U, and W-shaped paths of the economy.<sup>36</sup> A V-shaped path for the economy, i.e., GDP and unemployment, could be viewed as an optimistic baseline. It is supported by the fact that approximately 90% of unemployment was reported to be temporary.<sup>37</sup> A U-shaped scenario could be viewed as a replay of the 2008 crisis, and a W-shaped scenario is supported by the recent spike in the number of COVID-19 cases triggered by early reopening. It is also akin to a hypothetical realization of the double-dip fears from the 2008 recession. These scenarios may remain in the supervisory stress-testing toolkit for some time. They represent a useful starting point for building a firm's own exploration of the plausibility region that could also include an L-shaped scenario in which the economy operates on a lower level for the foreseeable future. Contemplating such scenarios is also necessary to understand the risks to the capital-return plans that the Federal Reserve now ties to recent revenues<sup>38</sup>.

Experimentation with alternative scenarios could help banks determine the appropriate boundary of plausibility while reducing reliance on expert judgment. Institutions could analyze performance under various combinations of peak unemployment levels and transition speeds. The historical distribution of losses could then be used to draw the plausibility boundary that depends on the firm's risk aversion. Note that implausible scenarios should not be discarded: They could be compared to the economic environment in order to identify emerging risks and severity changes. Additionally, these "for information" scenarios could eventually become the new plausible scenarios if the environment deteriorates further. This approach is similar to the BCBS's long-list vs. short-list approach.<sup>39</sup>

One of the defining characteristics of the current pandemic that we've seen is that it has affected market participants differently, even benefiting some. To accurately assess their exposures, firms may need to create scenarios that are more detailed than would be sufficient during normal times. To develop more detailed scenarios while maintaining plausibility, it's our view that banks could follow a top-down approach that starts with a targeted national-level scenario, then broken down into regional or sectoral movements using appropriate correlation assumptions. Importantly, the discussed correlation assumptions must be consistent with the considered scenario and the current economic environment. We believe non-stressed risk drivers should be set at their expected levels, conditional on the assumed paths of the stressed variables to maximize scenario plausibility. If GDP and S&P 500 are selected as the only two risk drivers, inflation should follow the most likely path given how GDP drives the real economy.

Plausibility should be conditional on the current economic environment. The figure below shows that the Federal Reserve's initial (SCAP) scenario for the unemployment rate used in 2009 matched closely the then-unknown historical path. The subsequent scenario used in 2013 was less severe because the unemployment rate remained high. In 2018, when the unemployment rate declined below four percent, the increase of the unemployment rate in the Federal Reserve's severely adverse scenario became larger than during the 2008 financial crisis.<sup>40</sup> That is, the regulator considered progressively more severe scenarios as the economy strengthened. When compared to the current crisis, the Fed's 2018 scenario for unemployment seems mild.

**Figure 1. The Evolution of the CCAR Severely Adverse Scenario for the Unemployment Rate<sup>41</sup>**



Plausibility should be also assessed against relevant historical experience. We think the previous pandemics (1957-58, 1918) and historical instances of widespread natural disasters (Fukushima nuclear disaster, Hurricane Maria in Puerto Rico) could provide useful guidance. Just as with any historical scenario, the pandemic experiences need to be “indexed” to the current day. The ability of some businesses to perform work remotely, as well as lower labor intensity and higher adaptability of production processes, suggest that a pandemic should have a less damaging economic effect. The uncertainty and heterogeneity in businesses’ adaptability make any pandemic scenario highly uncertain and should prompt banks to consider a range of scenarios and impacts.

Equally as important as assessing plausibility is having a clear business or economics narrative explaining how actions the bank’s clients take would translate into losses, or gains, to the bank and a clear explanation of how movements in the scenario variables capture risks. To that end, banks should carefully consider which macroeconomic, regional, and institutional variables are best able to capture risks the bank faces. These may include not only the unemployment rate, GDP, and stock market returns but also the number of loan-modification requests, regional unemployment rates, and other data.

### 2.3.5 SEVERITY

The severity of a scenario may come in different forms. In our view, scenarios should include the depth, length, and resulting new normal of a pandemic-driven economic downturn. Additionally, banks should consider the shape of any assumed recovery, industry-specific losses, and regional variations (e.g., factors that may increase or decrease severity in the bank’s footprint, including population density, use of public transportation, quality of government response, quality of local health resources). Scenarios could also be created to consider variations in how national, regional, and local authorities, including supervisors, respond or provide support.

Large and/or complex banking institutions should consider a range of severities. Banks with concentrated exposures need to consider the scenarios in which, e.g., a pandemic affects disproportionately one geographic market over another as is the case in many countries, e.g., the U.S. Northeast., northern Italy, etc.

According to BCBS, most banks use stress scenarios that evolve over two-to-three years.<sup>42</sup> This is reasonable given that a typical recession lasts less than a year. The 2008 Great Recession lasted 18 months in the U.S.<sup>43</sup> and 15 months in the EU.<sup>44</sup> This length may seem insufficient for a pandemic scenario. At the same time, in our opinion, economies around the world should be on a path to recovery after three years, and the fact the recovery is not complete may be accounted for with an appropriate overlay. Only the banks using stress periods of less than three years are expected to make such adjustments.



### 2.3.6 QUALITATIVE JUDGMENT

Recently, the U.K.'s Monetary Policy Committee outlined their own COVID-19 scenario to illustrate “the channels through which the pandemic is likely to affect the economy.”<sup>45</sup> The scenario assumed that the government would start loosening social distancing restrictions in June 2020 until they unwind fully in the third quarter of 2020. The government’s fiscal support is expected to follow a similar path. However, the committee does not expect national consumption to recover fully due to residual uncertainty. In the European Central Bank’s (ECB) alternative scenarios, output recovers fully only after 2022, even in the mild-severity scenario.<sup>46,47</sup>

There appear to be only a few historical experiences, e.g., the 1918 Spanish influenza, that could be extrapolated to the current pandemic. Yet, at any given moment, there are other significant events, such as a natural disaster, war, or a virus outbreak, in some corner of the world that could be used as a proxy. For example, the earthquake in Japan in 2011 forced extensive production closures lasting several months and relocation of a large fraction of the population. While this event was fairly recent, we think due to changes in technology, government response, etc. the use of qualitative judgment in designing forward-looking stress scenarios is inevitable and desirable when extrapolating to the 2020 pandemic.

### 2.3.7 REVERSE STRESS TESTING

When developing a new scenario, banks typically assess a range of potential scenarios with some scenarios deemed to be implausible. Banks could use such scenarios for the purposes of reverse stress testing. For example, banks could ask what combinations of scenario severity, length, and long-term environmental impacts would prompt the bank to use its capital or liquidity buffers, and which would render the bank insolvent or illiquid? To give a more specific example, what fraction of mortgage borrowers need to default to force the bank to deplete its capital buffer?

### 2.3.8 EPIDEMIOLOGICAL MODELING

The driving force behind the current crisis is a pandemic-driven, exogenous shock, and scenario development should consider potential future paths that the unfolding pandemic may follow. There are many different epidemiological models available to the public.<sup>48,49,50,51,52,53</sup> These models allow us to forecast the spread of infection over time and space, but their predictive power is mostly unknown. Still, we believe such models could be used to get a sense of the possible duration and intensity of the pandemic scenario, provided that banks understand the limitations of these models.


Pandemic modeling will be more useful, given the uncertainty associated with its predictions, for the design of the baseline scenario. The baseline scenario’s severity will set a tone for the stress scenarios.

Since the supervisory guidance on model risk management was issued in 2011,<sup>54</sup> we have seen that banks have developed robust model risk management programs. Our observations are consistent with the BCBS’s statement that “there has been significant advancement and evolution in stress-testing methodologies and infrastructure at both banks and authorities.”<sup>55</sup> We believe this institutional knowledge, and the related policies and procedures, should be followed when it comes to the use of epidemiological models.

### 2.3.9 COMPREHENSIVENESS

As mentioned previously, the current pandemic has led to catastrophic unemployment,<sup>56</sup> and we believe the follow-on effects are likely to be widespread and unpredictable. Banks should, therefore, consider scenarios that involve multiple failures or stresses at once. For example, while credit losses surely will rise, remote technology may increase the risk another type of risk — exposing personally identifiable information. Customers may find longer wait times, which could lead to reputational damage. Banks should also consider second- or third-order effects. For example, restaurant closures might directly affect a commercial real estate portfolio, while agricultural firms, with large exposure to restaurants, may be at risk if they cannot pivot and sell to consumers easily. As a starting point, in our view, banks should develop a table of expected impacts for each sector. In doing so, banks





should consider current exposures across all business lines. Which business lines will be hit the hardest and which might benefit? Have recent changes to strategy, clients, or geography resulted in changed exposures that need to be prioritized for review?

### **2.3.10 STRESS TESTING AS ACTIVE RISK MANAGEMENT TOOL**

In our experience, supervisors expect banks to use stress testing not only to fulfill regulatory requirements, but also to inform management decision-making. With respect to capital adequacy, stress testing results may reveal which business lines are riskiest while also providing comfort to business lines where banking activity could continue even in stressful scenarios. Management should focus on most material and vulnerable businesses and the most influential risk factors. In our opinion, net interest income is likely to remain low as the central banks keep interest rates low to support their economies, and credit losses are likely to surge due to the increased unemployment.

With respect to liquidity stress testing, banks should revisit and refresh analysis of contingency funding options, associated pros and cons, and sequence considerations. Management should evaluate the viability or any changed procedures for deploying pre-existing contingent sources, consider available public-support programs, and assess strategic implications of the various options. For example, typical asset-side contingent funding levers include reducing credit lines or increasing collections. Evaluation of these levers must consider the new set of the credit business's strategic drivers to address unique customer and systemic needs and associated reputation and long-term business strategy objectives.

To conclude, the ability to perform stress testing in nearly real time is critical during a pandemic. The need to respond quickly generates new priorities for modeling, as the same high-modeling standards are challenging to uphold. Banks are likely to turn to sensitivity analyses that offer insights into the firm's position but, in the medium and longer terms, banks will need to assess their stress testing toolkit and if the current, stressful environment has revealed weaknesses in their stress-testing approaches.

## **3. Affirm Governance Structures, Documentation, and Reporting**

In this unprecedented and dynamic situation, we believe responsible risk managers will have to make rapid, widespread, judgmental modifications to critical financial estimates. At a minimum, banks will need to ensure these changes are internally consistent and are systematically tracked. To accomplish this, they will need a playbook of rules and principles. Our experience working with banks during and after the 2008 crisis suggests firms should resist the temptation to bypass governance. Banks that fail to do so may draw substantial, unwelcome attention from both internal and external stakeholders.

The methods by which critical expert judgments are developed and applied to financial estimates should follow a standardized, structured approach, be documented, and subject to substantive and qualified independent reviews.<sup>57,58</sup> We believe a crisis is not the time to abandon risk management processes but an opportunity to evaluate risk culture to see if it generates flexible and effective risk management when it counts most. In the fast-paced process of assessing and modifying financial risk assessments in a crisis, we believe it may be more efficient for reviewers to give feedback to the first line on a continuous or ad-hoc basis. Such consultation should be recorded, with particular attention to any resulting changes in approach. Our experience suggests that such records can serve as critical evidence for regulators and auditors seeking to assess governance on an ex-post basis.

### **3.1 Governance Structures**

#### **3.1.1 REAFFIRM ROLES, RESPONSIBILITIES, AND COMMUNICATION CHANNELS**



The high degree of uncertainty and dynamic business planning required to address new developments with clients, equity and debt markets, the real economy, and public-sector support programs reinforce the importance of developing strong communication channels between the business, treasury, and risk. To facilitate rapid, controlled decision-making, we recommend firms establish standing forums for clear, consistent, and real-time communication on developments that influence required risk management activities, while maintaining the clear delineation of roles and responsibilities between the three lines of defense. In addition, active and coordinated communications with external stakeholders, such as regulators and rating agencies, regarding the firm's capital and liquidity position and risk management strategies will likely prove key to establishing confidence and evidencing effective governance. Such communication will rely on key activities that are sometimes overlooked such as tracking analytical processes and exercises, and maintaining a central collection of documentation, similar to bank model inventories.

### **3.1.2 ASSESS CRISIS PRACTICES AGAINST INTENDED AND EXPECTED GOVERNANCE**

The goal of process-governance documentation is to promote consistency, transparency, and recordkeeping of processes used and decisions made. Above, we have identified approaches for assessing the limitations of existing financial risk measures, developing qualitative adjustments to those measures and stress tests relevant for the crisis. These steps may serve as the outline for updating existing risk measures or developing new ones. These approaches should be assessed against existing processes with differences likely the result of:


- Introduction of new assessment and development processes
- Necessary streamlining of existing development and review processes and documentation
- Modifications to processes that may have relied on historical relationships or quantitative approaches that no longer seem adequate

Any uncovered gaps should be addressed through clear decision-making focused on streamlining processes to deal with the dynamics of the crisis. Likewise, governance of scenario development, stress testing, and liquidity may require modifications, particularly where frameworks have mandated reliance on historical relationships or quantitative approaches that no longer seem adequate. Institutions should document the resulting process requirements, paying special attention to methods and tactics used to prioritize financial-risk measures for assessment and review. This may require assessment of financial-risk measures that have not assessed for materiality or that need to be assessed in new contexts. Materiality assessments can be a key tool in streamlining processes and both the development of materiality assessments and the differential governance requirements they allow should be as clearly documented as is practical. Such processes and their documentation should align to and directly reference the bank's crisis-management policies.

Firms can demonstrate effective risk management processes by examining how underlying processes and controls operate within the established governance frameworks. For credit, effective risk management will be demonstrated by outcomes of current decision-making. Credit officers need to rely on quantitative tools and models available as a starting point and then apply a level of expert judgment. We think senior management, boards, and regulators will look back on how credit organizations performed during these times — sizing the risk, taking actions, triaging troubled portfolios, assessing and managing the downside, and reporting. These tasks are carried out within the framework of current practices and governance but also serve to identify those areas needing modifications. Ultimately, credit management will need to make decisions, justify their rationale and process, and track the outcomes over time.

### **3.1.3 POLICIES AND PROCEDURES**

Existing policies and procedures may prove too time-consuming and inflexible to support financial risk management needs in the crisis dynamic. However, it is critical that banks not violate current policies and procedures in their response. While exception processes should be used as necessary to prevent violations, excessive reliance on these should be taken as a sign that governance framework documents need to be modified, a view that may be taken by regulators. To prevent this, banks should review their current policies and procedures against their evolving process design and fundamental risk management principles to see where policy or procedure modifications, either permanent or temporary, are required to facilitate effective risk management under the current stress conditions. Modifications may be incorporated into standalone temporary policies or procedures, written exceptions granted at the appropriate level over a period of time, or incorporated as permanent changes.



Our experience suggests that process changes are most likely to touch on the following areas addressed in policies and procedures:

- Quantitative and qualitative model risk management, including model development, validation, and use<sup>59</sup>
- Development, review and challenge, and use of overlays<sup>60</sup>
- Credit loss provisioning
- Stress testing for both capital and liquidity

Within these areas, key topics will likely include scenario development, development and review of overlays, ongoing monitoring and adjustments of models, and judgmental estimates, as these will likely be core activity areas. These topics may be covered in the model risk management framework or regulatory stress-testing related policies and procedures. Risk sensitive governance requirements as suggested by SR 15-19 (“the intensity of model risk management for overlays should be a function of the materiality of the model and overlay”)<sup>61</sup> will likely prove necessary, but not sufficient to produce the efficiency needed to respond to the crisis dynamic.

We think governance requirements in policies and procedures should be reviewed relative to any special process changes needed for a more rapid response, such as teaming model risk or compliance, ensuring for relevant first-line staff (while maintaining a strict separation between first- and second-line responsibilities), or holding and documenting more frequent — even daily — meetings of governance bodies with stakeholders and decision-makers.

Risk management staff should assure compliance with governance framework requirements both by helping to clarify existing minimum requirements and suggesting governance changes that achieve the application of key risk management principles within the current dynamic environment. New or changed policies and procedures should be subject to a governance process that allows for rapid, but well-governed, evolution and two-way communication between document owners and users. Such governance documentation should be kept up to date, with changes communicated quickly to stakeholders.

## 3.2 Documentation

In addition to serving important internal reporting and tracking functions, we believe some level of documentation of each financial-estimation process will likely prove invaluable when supervisors arrive to examine banks’ approaches to grappling with the crisis. Documentation should be developed to address three primary activities:

- Assessments of existing financial risk measures’ limitations
- Qualitative approaches to address these limitations
- Development of scenarios relevant for the crisis

In addition, institutions should develop documentation confirming effective review and challenge of the three activities listed above.

Although any analytical process should be documented, staff may find the rapid pace required for crisis response interferes with their ability to produce the documentation level typically expected. This may be exacerbated by the introduction of new or highly modified processes that incorporate far more judgment than is typical, causing confusion regarding acceptable content.

To maintain an orderly and auditable system, documentation of these processes should adhere to the following principles:

- Each analytical process should have some level of documentation
- The breadth and depth of documentation requirements should vary depending on the materiality of the estimate
- Requirements should be standardized as much as possible to encourage consistency
- Processes should incorporate generation of relevant documentation as much as possible to enhance accuracy and efficiency
- Individuals responsible for review and challenge should be documented





Minimum (i.e. for the lowest materiality processes) documentation requirements should include the names of those involved in the process, a description of the process, and its use, in order to place the analytical process within the larger analytical framework. In addition, we suggest a statement of and justifications for the materiality rating (which, after all, justified this lower level of requirements) and copies of files typically generated in such processes, such as testing files and any formulas developed, as their value may be high and the cost of producing them should be low.

For more material processes, more analysis should be required, and justifications more comprehensively spelled out. Potential incremental requirements should include the following:

- Fully developed rationale for the analytical process, including an explanation for the extensive use of judgment, if applicable
- Explanation and justification for significant judgment applied
- Review of any available literature regarding the performance of related processes in past crises
- Rationale for tests conducted and interpretation of any test results
- Recommendations regarding any ongoing monitoring processes
- Areas addressed by review and challenge and any changes made as a result

### 3.3 Reporting

In our view, institutions should maintain a strong presentation of how the process has been implemented and used to drive decisions, with regular reporting to key stakeholders, internal and external. While the evidence regarding compliance with financial-estimate assessment and modification and scenario-development governance processes will be generated by the documentation described above, additional reporting should be required to inform and gain approval from business and functional committees, senior management, and the board.

We view it as particularly important that reports developed in this period highlight the reliability of their estimates. While this content is broadly expected by supervisors, such nuance will likely be particularly important during this highly uncertain period, both to improve consumers' understanding of the numbers presented and reassure supervisors that decision-makers understand the reliability of the information they receive.<sup>62</sup>


For business-line and relevant risk committees, who include those addressing model risk, loss provisioning, stress testing, and credit risk management, reporting should include clear narratives that address the following:

- Overview of the assessment process
- Assessment results for relevant models
- Impact of assessment results (i.e. overlays) on relevant metrics
- Potential implications for business strategy and reporting

Banks should give senior-level executive risk committees higher-level reporting, focused on the scenarios' potential impacts to modeling and modeled results as well as major assumptions made and their impact on financial estimates. In the words of the Federal Reserve, "In general, the purpose and impact of material overlays should be communicated to senior management in a manner that facilitates an understanding of the issues by the bank's senior management."<sup>63</sup>

Reporting to the board should be designed to inform, with reports produced and distributed at a more frequent cadence than normal due to the dynamic situation. Such reporting should include somewhat greater detail than normal, addressing potential model shortcomings in the crisis, major assumptions made to address those shortcomings, and their impact on results. Reporting should also address the crisis-scenario model-assessment program and significant decisions regarding provisioning, liquidity, and stress testing. Institutions should make the impact of model risk and revised assumptions on these decisions clear.

Reporting to regulators is likely to be particularly critical due both to the current crisis broadly and the nature of the crisis model-assessment process. Reporting should be frequent and transparent and address activities and their motivation. Banks should set



realistic goals with regulators, making only those commitments bank staff are confident they can meet. Based on our experience, timely reporting to regulators is critical, even when reporting bad news.

## 4. Conclusion

Promontory's view is that the effectiveness of risk management processes will be demonstrated ultimately both through an assessment of risks identified and mitigated, accompanied by evidence that show actions that were based on processes subjected to controls and established governance frameworks. The COVID-19 crisis will require banking organizations to revisit capital and liquidity plans and loan-provisioning estimates under unique conditions.


We know that the current unpredictability of potential outcomes creates challenges in estimating reserves and loan-loss allowances, but banks will be under enormous pressure to justify the assumptions they make, both to their accountants and their regulators. We do not think it is feasible to fix unreliable statistical models in the short term. Instead, firms should take steps to develop qualitative approaches for estimating important risk outcomes.

Banks should therefore rapidly update analytics as they attempt to distinguish between impacts that are temporary liquidity shocks and longer-term economic events. This will challenge organizations' governance, risk, and internal controls systems in a highly stressful and rapidly changing environment.





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  57. In the context of regulatory stress-testing, the Fed states that, “A firm should establish a consistent firm-wide process for applying model overlays and for controls around model overlays... Model overlays (including those based solely on expert or management judgment) should be subject to validation or some other type of effective challenge.” “Federal Reserve Supervisory Assessment of Capital Planning and Positions for Large and Noncomplex Firms (SR 15-19).” Board of Governors of the Federal Reserve System, 18 Dec. 2015, [https://www.federalreserve.gov/supervisionreg/srletters/sr1519\\_PW.pdf](https://www.federalreserve.gov/supervisionreg/srletters/sr1519_PW.pdf).
  58. While the text in the above footnote is not directly applicable to the models currently under discussion, we suggest it be applied consistently with the materiality principle in the Federal Reserve’s “Supervisory Guidance on Model Risk Management” (SR 11-7).
  59. We use the model definition from the guidance, which includes in its model definition, “quantitative approaches whose inputs are partially or wholly qualitative or based on expert judgment, provided that the output is quantitative in nature.” See: “Supervisory Guidance on Model Risk Management.” Board of Governors of the Federal Reserve System and Office of the Comptroller of the Currency, 4 April 2011, <https://www.occ.treas.gov/news-issuances/bulletins/2011/bulletin-2011-12a.pdf>. In our experience, the range of industry practice regarding qualitative models is quite broad, and our text is intended to be inclusive.
  60. For purposes of this discussion, we are not distinguishing among model overlays, management overlays, model adjustments and model overrides.
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