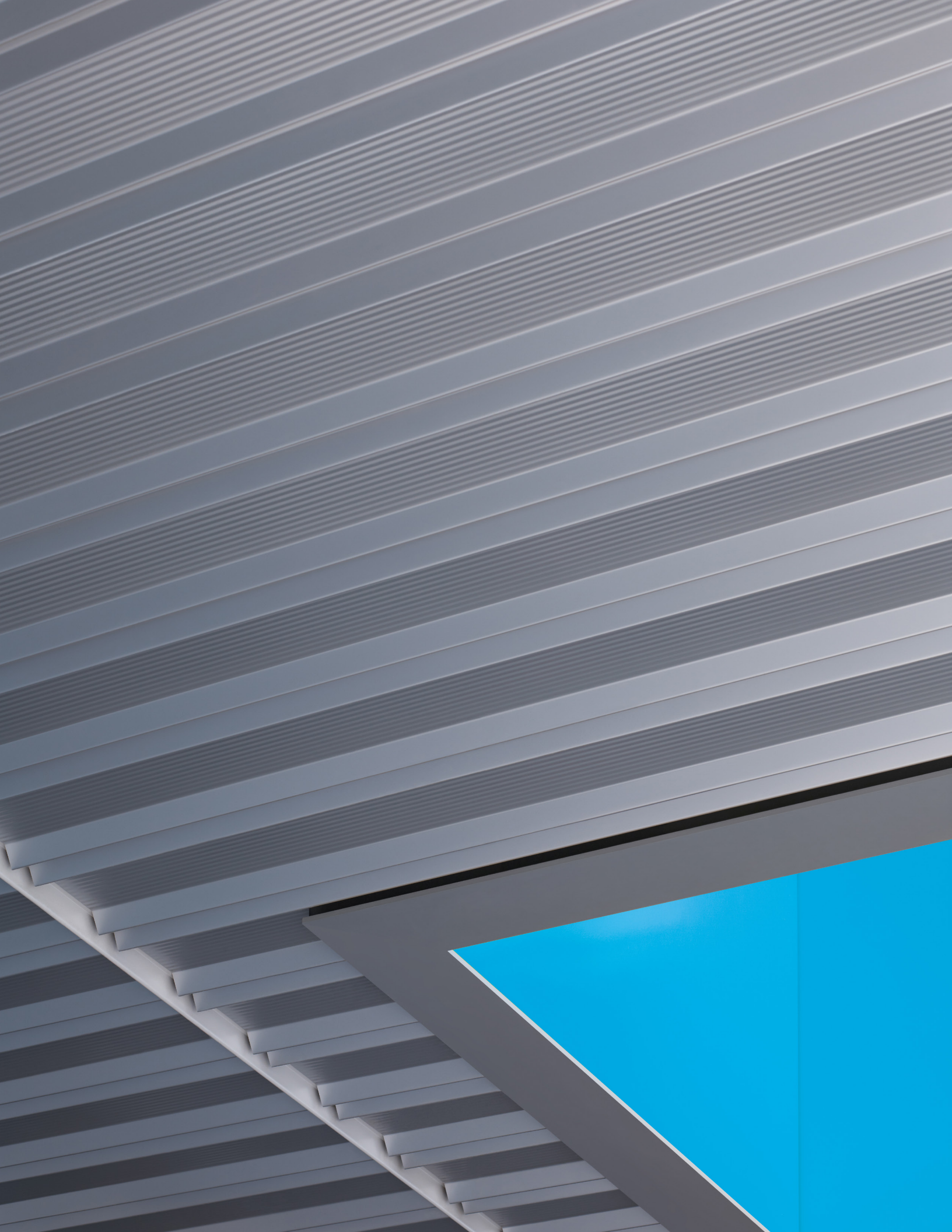




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# Perspectives on CCAR: Confronting uncertainty in the 2018 cycle

Risk | July 2017



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# Context

On June 28th, the Federal Reserve Board (the Fed) released the results of its 2017 Comprehensive Capital Analysis and Review (CCAR) for the 34 bank holding companies (BHCs) with more than \$50 billion in assets. Institutions continue to build capital and, on average, showed an increase of 1.7 percent to common equity tier 1 (CET1) capital over the previous year. So it was not surprising that, for the third year in a row, no bank failed on quantitative grounds.

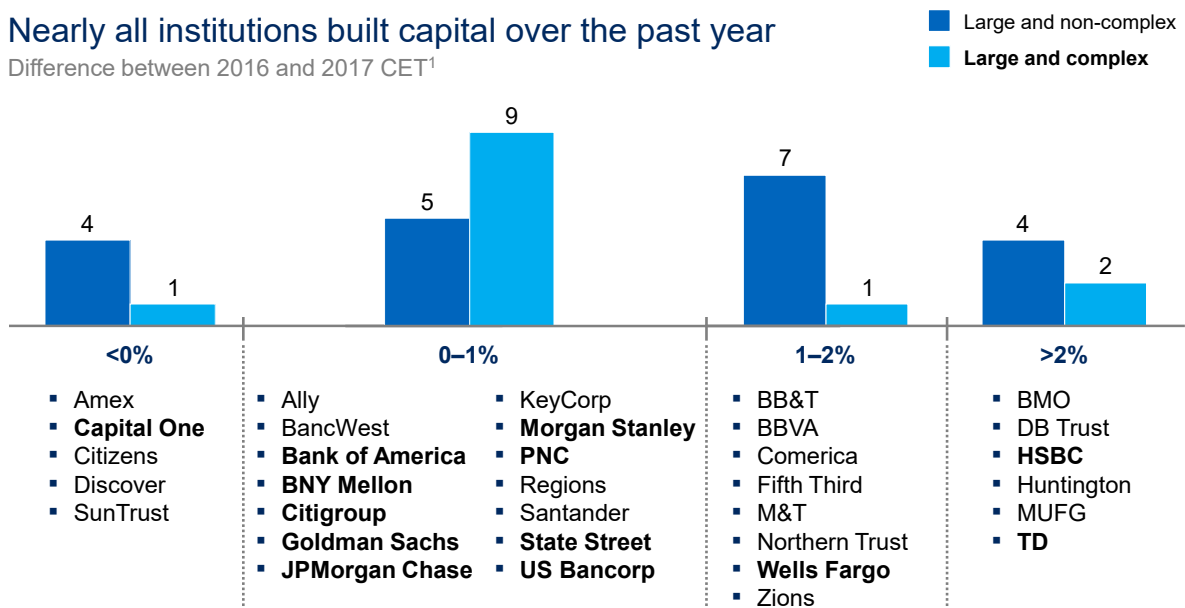
However, 2017 was a year of firsts for the qualitative portion of the CCAR exam. For the first time, the 21 less-complex institutions covered by SR 15-19 were not subject to a public qualitative review. Instead, they will undergo a private review and feedback process that begins this summer. In another first, all 13 large and complex banks covered by SR 15-18 publicly “passed” the qualitative portion of the test. Only Capital One received a conditional nonobjection and is required to resubmit to address identified weaknesses.

In the immediate term, banks are calibrating how much focus and how many resources to devote to CCAR 2018. They fared well in the 2017 CCAR cycle and are better capitalized than they have been in recent history. Furthermore, the Administration has stated deregulation as an aim, including in banking, and has begun making new appointments to key regulatory roles. So far, however, the Fed has given no signs of lowering its standards, and the downside of failing CCAR remains stark.

As banks prepare for CCAR 2018, there are five overarching themes to keep in mind, which we outline in the Executive summary. In the brief sections that follow, we look at developments in several areas that received extensive Fed feedback: risk identification, model risk management, data quality, and internal audit.

## Nearly all institutions built capital over the past year

Difference between 2016 and 2017 CET<sup>1</sup>



<sup>1</sup> Results exclude CIT Group, Inc. which filed CCAR for the first time in 2017

Source: 2016 and 2017 Federal Reserve Board Comprehensive Capital Analysis and Review: Assessment Framework and Results

# Executive summary

Against the backdrop of significant regulatory uncertainty, we see five key themes emerging as banks begin to address their CCAR 2017 shortcomings, to prepare for CCAR 2018, and to build their longer-term approach for stress testing.

## 1. STANDARDS WILL REMAIN STRINGENT EVEN IF THE PROCESS LIGHTENS

The Administration has indicated its broad intent to shift toward more targeted supervision and less stringent regulation. Banks are considering whether, when, and how this might impact CCAR. We see little sign that the Fed would dismantle the fundamental components of the standards established over the past ten years of stress testing, even if the test continues to grow more risk-based and less intensive. Banks that fall under the Large Institution Supervision Coordination Committee (LISCC) framework and the US intermediate holding companies (IHCs) that are newly subject to CCAR in 2018 will need to remain particularly vigilant.

Changes to CCAR over the past year and current discussions indicate movement toward a more risk-based approach. In CCAR 2017, LISCC firms received somewhat tighter treatment than those SR 15-18 banks that are simply large and complex, and the less-risky banks covered under SR 15-19 were not subject to the public qualitative process at all. There has been discussion of increased future differentiation based on risk profile, which the Treasury Department has included in its recommendations for US financial-system reform. Fed feedback and public statements so far, however, indicate that CCAR substantive standards for the largest banks would remain unchanged.

There are signs that the CCAR process itself may become less daunting—less frequent, more private, and carried out with more transparent standards. The Fed already has become more publicly transparent about its CCAR assessment process, and some elements of bank results are no longer published. More broadly, the Treasury recommendations reflect a general preference

for increased transparency about regulatory approaches but less public sharing of bank performance. The published 2017 CCAR results showed more regulatory transparency than in the past, describing the qualitative assessment process and giving specific examples of firms' weaknesses from past years. Furthermore, Fed Chair Yellen and Fed Governor Powell have indicated that the Fed may begin to release more granular information about its models. There is also discussion—for example, in the Treasury report on potential regulatory reforms—about changing the CCAR review cycle to every other year, while retaining more frequent review of underlying capabilities. For now, however, nothing indicates big changes for SR 15-18 firms in CCAR 2018.

## 2. FOCUS INCREASES ON UNDERSTANDING IMPACT FROM NEW TYPES OF STRESS

Since its inception, CCAR has required banks to demonstrate capital adequacy under stress. The current rising-rate environment, more general macroeconomic uncertainties, and the development of new products driven by the advance of digital all mean that the stresses of tomorrow will likely look different from those in the past. Perhaps spurred by these circumstances, the Fed has begun to more explicitly call upon institutions to exhibit a nuanced understanding of what might occur in stressed conditions, particularly in those without historical precedent.

These expectations affect both risk identification and loss estimation. For risk identification, Fed feedback this year calls on firms to understand risks that may appear only under stress, and particularly singles out risks stemming from new products and changes in underwriting standards. Loss-estimation methodologies must capture stress-specific relationships between risk drivers and losses—including when these relationships diverge from those in expected conditions or in previous downturns.

The global-market-shock (GMS) portion of CCAR illustrates the Fed's expectations for loss estimation. Risk identification for GMS must be much more granular than the bank-wide risk-identification process and can include more than 1,000 risk factors. For GMS, risk identification must cover illiquidity, concentration, and basis risks in stress conditions. Exposing portfolios to scenarios that break historical patterns can help institutions identify risks that will appear only under unprecedented stresses. Loss estimation in the GMS test can require tailored methodologies to accurately capture the impact of risk factors on losses. Modeling portfolios at the most granular level possible, performing a full revaluation, and actively involving the front office in review and challenge can improve accuracy and understanding of loss estimation in a high-stress environment.

### **3. FOCUS CONTINUES ON STRENGTHENING INTERNAL CONTROLS**

Ultimately, the Fed expects banks to provide their own fully effective controls, rather than relying on external, regulatory controls. Attention on internal controls is not new. However, while many firms have made meaningful improvements over the past year, the Fed continues to call out SR 15-18 firms for falling short of ultimate expectations across model risk management, data accuracy, and internal audit. As banks make improvements in these control areas, the Fed will be able to devote comparatively more focus on CCAR results and less on probing the CCAR process—a help when supervisory resources are constrained and regulators are under pressure from the Administration to show that regulation is efficient, one of the core principles laid out in Executive Order 13772. Of course, institutions themselves also stand to gain from strong and efficient internal controls, which allow them also to focus more on results than on process.

In the 2018 CCAR cycle, for example, the Fed will expect all banks to show mastery of the basics in model risk management (MRM): a well-defined

model-identification process, a demonstrably independent validation function, consistent standards applied across comprehensive model inventories, and disciplined and transparent work flows. More-advanced institutions should focus on ensuring a validation approach tuned to degree of risk and encompassing nonstatistical methodologies as well as models.

In data and data governance, supervisors are focusing on controls that can ensure accuracy of the data used in CCAR, both for models and in specifying the “jump-off” point for the stress test. Banks should already have a clearly defined data architecture, systematically implemented data-quality controls, and governance standards that ensure continual independent validation of data quality and lineage. More-advanced institutions are investing in automation to reduce costs and allow employees to focus on results and insights, rather than data reconciliation.

In recent years, the Fed has raised its expectations of internal audit programs, and again in 2017, it highlighted weaknesses in this area in CCAR filings. The Fed expects that audit should be able to review, challenge, and spur change across areas where supervisors continue to find deficiencies, including in risk identification, loss estimation, model risk management, and data governance. As banks shift to more risk-based approaches, meeting this challenge will require increasingly sophisticated audit functions with more resources, including talent with deep business knowledge.

### **4. CCAR EXPECTATIONS WILL CONTINUE TO REFLECT BROAD REGULATORY PRIORITIES**

The Fed has adopted CCAR as its most potent mechanism to transmit expectations for fundamental risk management. All signs indicate that this will continue. In past cycles and in 2017, the Fed has used CCAR to clarify and reinforce expectations for routine bank processes in risk identification, governance, and foundational control areas (model risk management, data accuracy, and internal

audit). For example, the Fed initially used the CCAR exam to push institutions to develop systematic risk-identification processes, but it now requires banks to embed risk identification as a foundational risk activity in daily operations, not just treat it as a once-a-year regulatory exercise. Similarly, banks are now expected to consistently apply the same strong MRM standards that they developed for CCAR across all models in the inventory.

The Fed also expects that standards that apply more broadly to the bank will be embedded in capital-planning processes, and it holds banks to these standards when conducting CCAR reviews. For example, the Fed expects that approaches used in the CCAR process will reflect the BCBS 239 principles on risk data aggregation, standards for board involvement in critical decision making, and a robust and independent internal audit process.

## 5. PROACTIVE INSTITUTIONS WILL CAPITALIZE ON THEIR CCAR INVESTMENTS

Since the inception of CCAR, banks have invested enormous amounts of money and time toward the test: as a group, the largest banks have spent more than two billion dollars and tens of millions of hours. Proactive institutions will leverage these investments to pursue operational and strategic objectives, even if regulatory demands grow less intensive. Some banks have already started to do this aggressively, while others have only experimented or not yet begun.

Integrating stress-testing outputs in decision making is the most obvious opportunity. Outputs can be used in budgeting, optimizing balance-sheet allocation, establishing risk appetite, and making acquisition or divestment decisions. Banks can also benefit by integrating stress-testing methodologies, capabilities, and systems into business-as-usual processes. For example, scenario generation can support rapid “what if” analyses; credit-loss modeling can inform portfolio management; and the experience gained through data-aggregation capabilities developed for stress testing can be

leveraged to support broader management and board reporting. Other capabilities developed initially for CCAR can also be used more generally, both in meeting broader regulatory expectations and in improving the quality of decision making. For example, the MRM capabilities and data-management improvements required for stress testing can help ensure the quality of pricing and customer segmentation.

To get the full benefit from their CCAR investments to date, most banks will need to continue to fine-tune and automate their stress-testing processes as far as possible, at least for the portfolios that drive overall financial results. Institutions should take advantage of this period of capital strength and relative regulatory uncertainty to demonstrate clearly for themselves and for their regulators which parts of their CCAR process will be most important for business purposes—and which aspects of the process add less value.



# 1. Risk identification

## MOVING BEYOND JUST STRESS TESTING

In response to regulatory pressures, including CCAR requirements, major banks in the United States have developed comprehensive risk-identification programs. These programs achieve the key objectives that regulators mandate: understanding, assessing, and prioritizing the range of potential risks banks face and providing a picture of risk for management and the board of directors. Regulators view risk identification as extending beyond the requirements of stress testing to using their assessment of risk-identification capabilities to press banks to bolster fundamental risk management. More broadly, risk identification is fundamental to the safe and efficient operation of a banking institution. Banks that recognize this have built on the risk-identification work they have done for capital planning and are making rigorous risk identification part of business-as-usual routines. We identify four stages of evolution in risk-identification sophistication and usage.

### 1. Developing and maintaining a risk inventory

An inventory or “catalog” of risks serves as a foundation for risk identification. And creating a catalog is a basic regulatory expectation. Banks must build and maintain a comprehensive inventory that includes risks across all risk types and lines of business. These inventories, which have been

built and refined over the past CCAR cycles, are a major achievement for US banks, in particular for the largest and most complex institutions (those subject to SR 15-18 review).

Creating a comprehensive risk-identification inventory requires solving complex process and methodology challenges, and banks must make important choices about how to do this. The first step in building a risk inventory is deciding the unit of risk in the inventory. Best-practice institutions have defined the unit as the risk event, instead of using generic risk categories. Organizing the risk inventory around risk events or “mini-scenarios” helps define the risk in more concrete terms. For example, by considering specific cyberevents (different potential attacks and different areas of the bank and IT systems that might be affected)—instead of assessing a single, generic cyberrisk category—banks identify actual risks that are more likely to occur. Using risk events also makes the exercise more practical and relevant, forcing business leaders and control functions to consider what events might actually happen and how they would ultimately affect the bank (e.g., immediate financial losses, harm to reputation, regulatory consequence). Risk events also help management to identify new or emerging risks and to start thinking about how to respond to them.





Best-practice institutions use the risk categories as the building blocks of a structured and detailed risk taxonomy that goes two or three levels deep beyond key risk types. These banks use such taxonomies to organize and classify risk events and apply them consistently across multiple risk-management processes, not just in risk identification.

Another key feature of the risk inventory is the ability to prioritize material risks. The number of risks in the inventory varies significantly across institutions (ranging from 100 to as many as 500 risks), but generally only a fraction of those (typically 20 to 60) are material. Best-practice materiality frameworks define clear thresholds for what is considered material and include assessments of both severity and likelihood, with severity comprising more than one type of impact (e.g., financial, reputational, customer) and sometimes taking into account the control environment, or lack thereof. In assessing different types of severity, materiality frameworks enable apples-to-apples assessment across the risk inventory and easier integration across related risks.

Best-practice inventories that are focused on events, structured around a taxonomy, and prioritized using a materiality framework provide leading institutions with a comprehensive view of bank risk profiles and how risks interact.

## 2. Integrating risk identification into capital planning

The next stage of the risk-identification evolution involves ensuring that inventories are fully integrated with other key capital-planning processes—scenario design and forecast methodology development, in particular.

In scenario design, leading banks now use the outputs of the risk-identification process to develop BHC scenarios to assess the impact of material risks on stress results. The risk inventory provides the insights from business leaders and control functions on specific vulnerabilities associated with the business activities of the institution. These insights

are used to customize scenarios at the business or portfolio level and make them more specific to the bank—for example, by changing the path of a scenario variable and/or by adding new elements to the scenario narrative. While not every material risk needs to be included in the severely adverse scenario for a given cycle, institutions need to demonstrate that they are able to assess the impact of all material risks and inform the board before approving the capital plan.

Best practices in methodology development include mapping material risks to their models and other methodologies that ensure that they are sensitive to the risks. This requires understanding the loss transmission mechanism (e.g., falling revenue, credit loss) and the triggers (e.g., specific macro variable, nonmacro event) for each risk. This can be achieved only with close collaboration between the front line and risk executives, on one side, and risk modelers, on the other. When gaps are found in this exercise, it usually results in the use of overlays during the stress-testing cycle and/or methodology enhancements for following cycles.

In addition to scenario design and methodology development, which are generally applicable to all portfolios under the nine-quarter macro scenarios, two other challenging integration areas have received particular regulatory attention: global market shock and the operational-risk-loss forecasts. In GMS, best-practice banks are integrating risk identification into daily risk-management routines and designing internal scenarios that break historical patterns. Given the requirements for granularity in risk-factor definition and the specific nature of trading and counterparty risks, risk identification for GMS typically follows a specific and distinct process.

For operational-risk loss, the challenge has been to integrate two processes and methodologies (risk identification and operational-loss forecasting), which were developed in parallel silos. Leading banks are now looking at these processes together

to understand how they feed into each other and to align methodological definitions—for example, how materiality is defined.

### 3. Embedding risk identification into enterprise risk management

A handful of banks have taken risk identification well beyond the realm of CCAR and capital planning and have embedded the process into the enterprise-risk-management (ERM) framework, connecting risk identification to other key business processes. For example, leading institutions now use the risk inventory in strategic planning. Identified risks for a given business line are considered at the start of the strategic review process and are updated as a result of changes in strategy or the business context. These risks are also used in risk-management processes such as risk appetite, where they are part of the limit framework, or in the product approval process, where they need to be part of the required assessment before launch.

From a governance perspective, the most important application of the risk inventory is for risk reporting to senior management and the board. Leading banks are able to extract and synthesize the contents of the risk inventory on a frequent basis to provide the board with a rich and insightful overview of the bank's risk profile and how it evolves over time.

For these banks, risk identification is no longer an ad hoc routine linked to the capital-planning cycle but a critical risk discipline that is embedded in the risk-management approach and processes of the bank. Leading banks recognize that to get the most out of risk identification in an efficient way, the process needs to be iterative, continuously maintained, increasingly tailored to the bank's business model and strategies, and foundational to its overall risk-management efforts.

We believe that this level of process integration is quickly becoming “table stakes” for banks because regulators continue to see risk identification as the critical connection between capital planning and

foundational risk management. And, when other risk issues arise, regulators seize the opportunity to criticize the quality and depth of risk-identification programs. A high level of risk-identification integration, however, poses conceptual and practical challenges for banks. Often, banks struggle to articulate the role of the risk-identification inventory program and how it connects to other management processes—where there may be overlap or conflict, due to differences in methodological approaches or objectives.

### 4. Leveraging risk identification as a strategic tool

Once it is embedded in ERM processes, risk identification can become a critical tool for top management and the board to use as they guide the strategy and operations of the institution. The most evolved risk-identification processes draw on outputs and insights from a range of sources, such as risk-type specific routines and tools, stress-testing analytics, and input from frontline personnel. These risk-identification processes can provide a rich and deep, but synthesized, perspective on the risk profile of the institution.

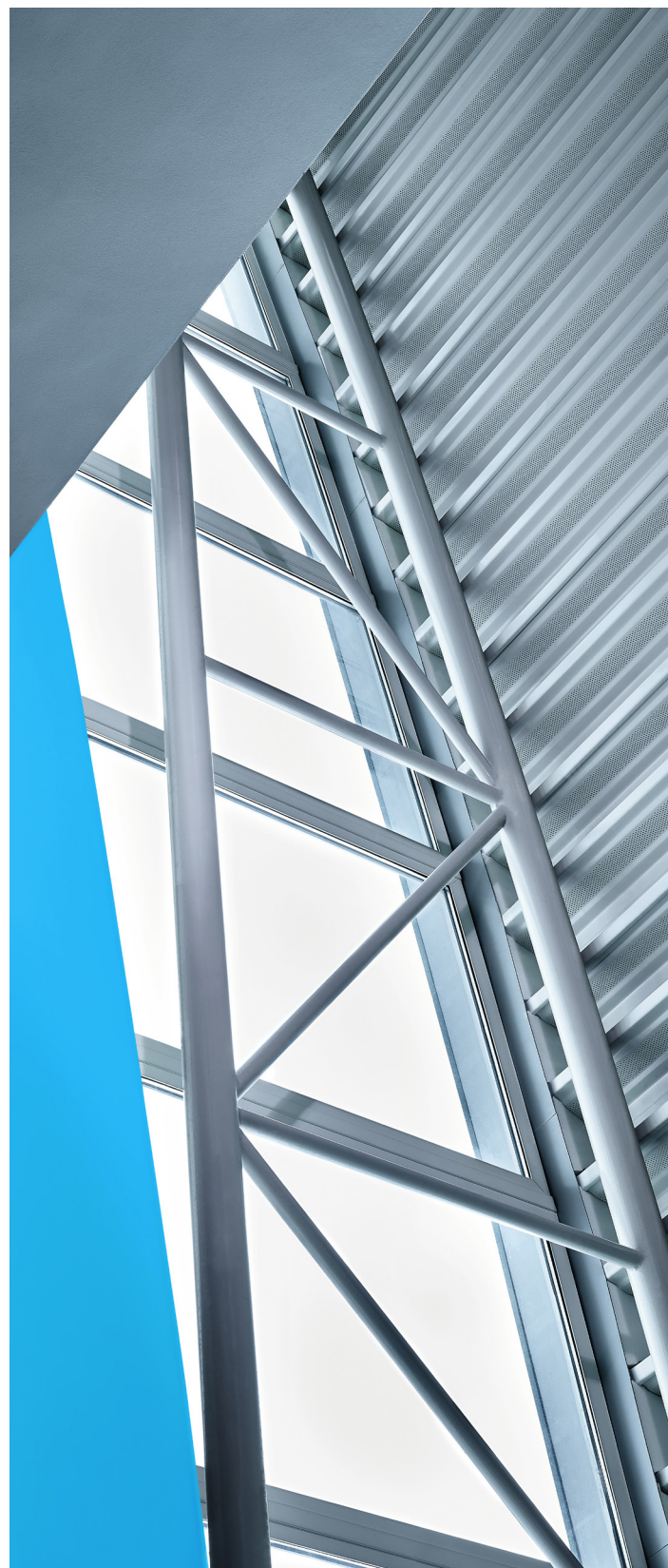
However, while the right process and methodology are necessary, they are not sufficient. Banks can create and maintain well-implemented processes that are integrated with capital planning and ERM and backed by robust methodologies and still fail to capture the strategic benefits of these programs. Risk identification will not provide the deep insight required for strategic use without support and engagement from senior business leaders and a strong risk culture that permeates the organization. The first line of defense needs to engage not just as participants in the process but also as risk owners, with a clear understanding of the organization's risk appetite and accountability for the impact of their actions on risk exposure.

## IMPLICATIONS FOR ACTION

In our view, risk identification will continue to be an important area of focus for the largest and most complex institutions over the short and medium term. Regulators see risk identification as an essential part of the connection between capital planning and foundational risk management, which can be seen as the final step in the CCAR journey. At the same time, banks need to make sure this process, which requires significant resources and management attention, provides an effective and efficient way for top management and the board to understand—dynamically and over time—the overall risk profile of the bank and the key vulnerabilities to which it is exposed.

In this context, we see implications for action that will vary by the stage of risk identification that a bank has achieved. For banks that still have not developed a risk inventory and integrated it with capital planning, the focus should be on quickly catching up, since most of the industry is already well beyond that point. In addition, these banks will need to start defining and implementing ERM integration use cases, both to match their peers and to avoid the regulatory feedback on ERM that others have received. For more-advanced banks, the focus should be on completing the list of key use cases for integration between risk identification and ERM, while moving on to the last stage of the journey, when they can use risk identification for strategic purposes.

*The authors wish to thank Juan Aristi Baquero from McKinsey's New York office for coauthoring this section.*



## 2. Model risk management

### CHOOSING AN OPERATING MODEL

Regulators are looking for continued MRM improvement in CCAR and beyond, despite the large strides institutions have made over the past several years, driven by the SR 11-7 regulatory expectation enforced through CCAR. CCAR 2017 feedback once again called out SR 15-18 firms as a group for falling short of expectations for controls around model risk management. In addition, CCAR feedback and that from the Fed's MRM horizontal review indicate that regulators increasingly require banks to extend CCAR MRM standards to non-stress-testing models as well. Areas in which firms should make continued progress across all models include the model-identification process, completeness of model inventories, application of consistent development and validation standards across models, and disciplined and transparent work flows.

Developing, validating, and maintaining large sets of models generate both complexity and expense, so banks will be under pressure to make the required improvements in cost-effective ways. At the same time, institutions should consider how they can leverage investments in MRM in ways that go beyond regulatory requirements. For example, strong MRM can inform risk-based decision making and aid in identification, assessment, and mitigation of sources of risk associated with models the bank uses.

In building efficient MRM operating models that address near-term regulatory imperatives and build a foundation for permanent and continuous MRM processes, banks need to make defining choices in the following four areas: the reporting line of the MRM function, mechanisms to ensure business ownership of models, degree to which decision making is centralized, and the approach to risk-based prioritization. All of these choices carry implications for bank operations and involve trade-offs.

#### 1. Reporting lines

Historically, banks have struggled with how to establish reporting lines that ensure an appropriate level of independence among development,

validation, and governance teams—and this is also a key area of regulatory focus. Having completely disjointed development and validation teams preserves full independence but can lead to misunderstandings about expectations and lengthen development-through-validation timelines. However, too tight a link between validation teams and development teams can compromise independence and raise questions from supervisors.

The reporting choice comes down to three options: integrated MRM, separated MRM with risk-focused development, and separated MRM with development serving beyond risk. In the fully integrated model, all MRM teams are in one unit headed by an individual who reports to the Chief Risk Officer (CRO). In the second archetype, model development and model validation each separately report directly to the CRO, typically with model governance sitting within the validation team. In the third and most independent model, model validation reports to the CRO while model development reports to the first line of defense, typically a center of excellence responsible for analytics.

To ensure structural independence, most large banks have moved to the second or third option, sometimes with a push from regulators. Both of these models demand disciplined processes and work-flow management to overcome the disjointed coordination that can come from having development and validation led by different senior leaders. The third option requires relatively greater process discipline but, beyond supporting independence, has the added benefit of conferring model ownership on the first line, which promotes development of models that incorporate true business understanding.

#### 2. Business ownership of risk models

Regulatory guidance requires banks to ensure meaningful business involvement in model development by providing fulsome input to models and holding ultimate accountability for model quality. Such guidance aims to ensure that models do not

just reflect statistical savvy but that they incorporate full understanding of the businesses they model.

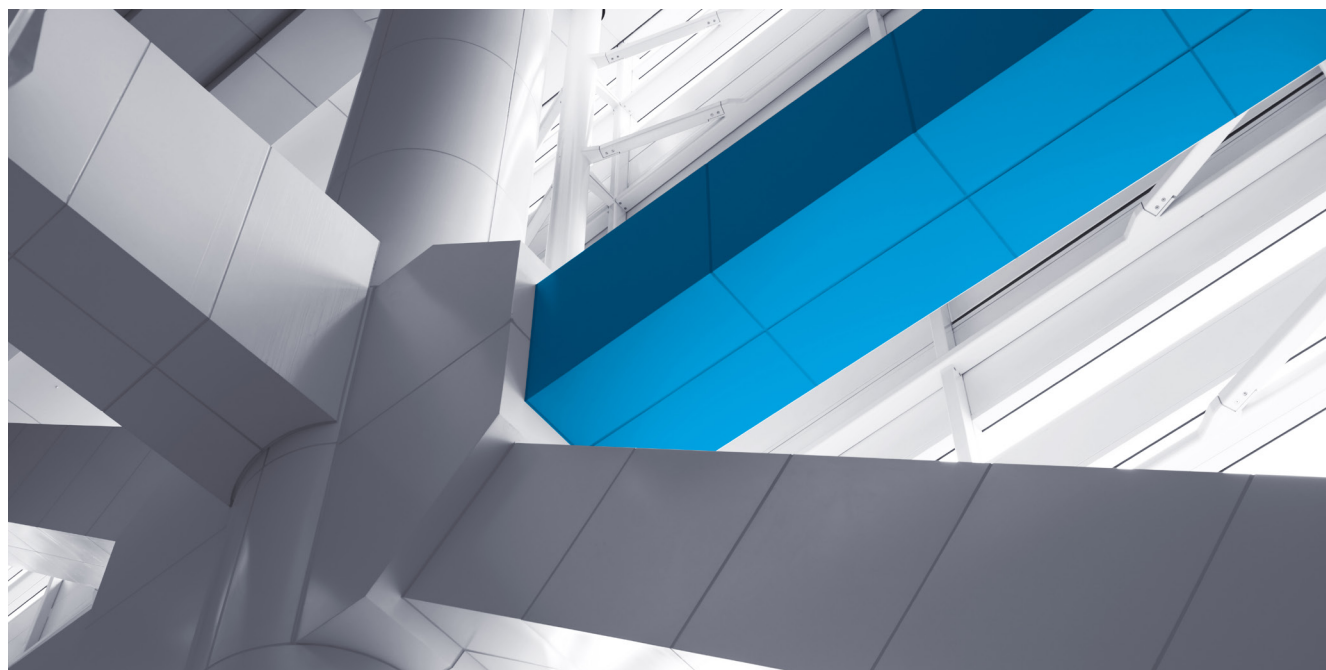
Many banks are wrestling with the best way to involve the business in model development—whether to engage business leaders in a targeted way, as most are doing now, or to fully transfer model ownership to the business. The approach of targeted business engagement seeks to minimize business leaders' time but also can yield suboptimal models that do not fully capture business intuition. By contrast, business ownership of models is more likely to result in modeling approaches that reflect business practices, have more economically intuitive variables, and are more transparent to the business. However, full transfer of ownership to the business is not without its challenges, including significantly increased time commitment from businesses and a mind-set shift in model-development units.

Increasing numbers of banks are transferring ownership of models to the business. For example, in a 2017 McKinsey survey on MRM, nearly half of the 27 CCAR banks surveyed reported having taken this step, compared to 9 institutions in 2016.

For institutions ready to require the increased commitment from businesses, the shift to business ownership of models has benefits beyond improving the quality of CCAR models. Reduced iteration between the business and separate model-development groups improves the efficiency of the model-development process. In addition, business ownership of models can help banks leverage their CCAR investment beyond stress testing. For example, CCAR models can be used as an input to the industry limit-setting process and in the near future will be used for calculating reserves under the current-expected-credit-loss (CECL) model.

### 3. Centralization of decision making

In many parts of CCAR, decisions made by one work stream or area have significant impact on other areas. For example, drawdown assumptions in wholesale have significant impact on pre-provision-net-revenue (PPNR) balances. Uncoordinated decisions can lead to inconsistencies that are often the focus areas for regulators. However, most institutions lack the process or governance to track interdependencies between models and their potential downstream impact.

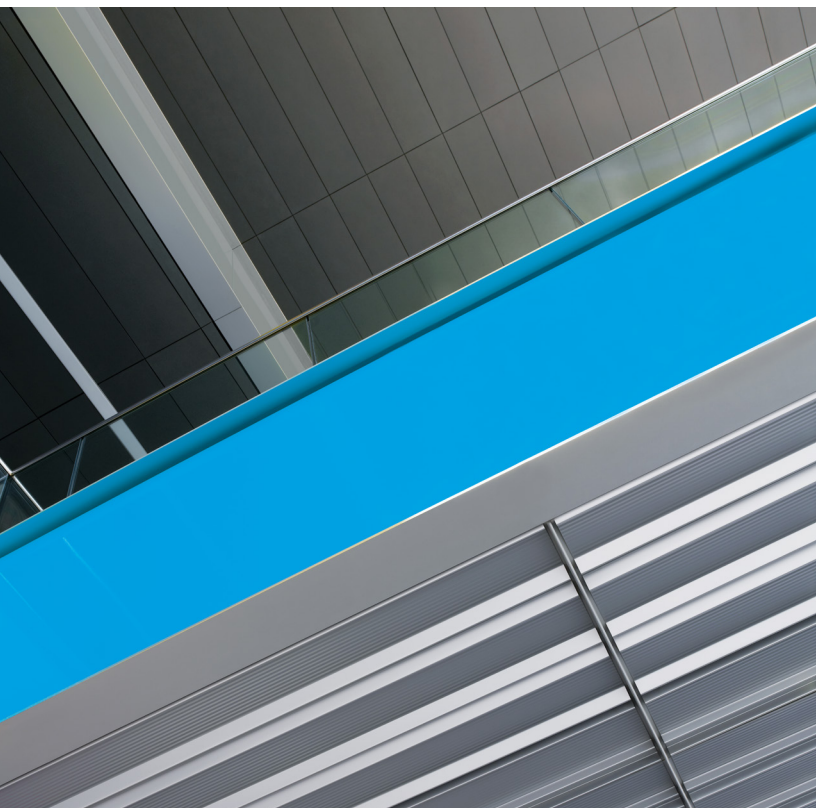


In this context, many banks are actively reconsidering whether to use a federated or centralized decision-making approach for developing stress-testing models. Greater centralization helps provide a coordinated view across modeling decisions. But it also requires that the central group have appropriate skills, including substantive understanding across modeling areas and disciplined project management. The federated model gives freer rein to modelers in their areas of expertise and, at first view, can seem less bureaucratic. However, to achieve decision-making consistency in such a model, banks need to establish governance structures and standardized tools and templates.

Four major dimensions characterize the degree of centralization: model-development timeline, coordination of business input, tracking and work flow, and ultimate accountability. In general, institutions should aim to be consistently more centralized or more federated across all four

dimensions. In the more centralized approach, an MRM team or other central body sets timelines for all model-development work and manages the process for business engagement. A central project-management office is then responsible for tracking and work flow. Finally, ultimate accountability for model quality and clarity of associated communication are held by a central coordinating team, the identity of which may vary by purpose of models—for example, the CCAR central team for the purposes of CCAR. In the more federated approach, each model-development team sets its own timelines, and model-validation staffing flexes as needed to accommodate peaks and valleys of demand. Likewise, individual model-development teams own the process for engaging with the business, soliciting input when required during model development. General project management also occurs at the level of individual model-development teams. In this more federated approach, individual model-development teams maintain ultimate accountability for the quality of their models and for the success and failure of associated regulatory requirements or business decisions.

In our experience, a centralized decision-making structure works best for cross-cutting decisions and is a better choice for institutions that have the appetite to establish a central team with the needed knowledge and skills. This centralized approach is also better suited to improving efficiency and capitalizing on the CCAR process in areas beyond stress testing. Central coordination allows for more flexible and optimized resource allocation, both good for efficiency. Having a centralized team can also help guide modeling groups beyond those working on stress testing in improving discipline in their model-development standards—for example, extending to pricing and customer-segmentation models.



#### 4. Risk-based prioritization

Historically, many banks either have treated every CCAR model as a high-risk or tier 1 model or have applied the highest development and validation standards across all models, even for models covering immaterial portfolios. Regulators have had two criticisms of prioritization schemes: first, they have questioned the rigor of validation by risk level, and, second, they have noted that suboptimal prioritization can lead to delays in development and validation of critical models. Many banks themselves have noted similar issues with a relatively undifferentiated approach to rating CCAR models, noting that it hinders their ability to prioritize time and focus in a risk-based way.

Institutions are therefore reconsidering how to risk-rate their CCAR models, deciding whether to continue with their existing tiering, in which every capital model is a high-risk model, or to design and implement a more robust risk-based system. Risk factors associated with tiering include materiality of the portfolio, complexity of the modeling approach, and usage of the model.

Increasingly, banks are turning to risk-based model tiering and prioritization. A risk-based view not only guides model development and validation but also helps define development and validation requirements and the approach to overlays. Based on our experience, implementing such a prioritization schema could boost efficiency in model development and validation by 20 to 30 percent, streamline and automate many manual model-development and -validation activities, and give banks insights into their most important risks.

#### IMPLICATIONS FOR ACTION

Banks should take full advantage of the calm period in the CCAR cycle to design and implement an effective and efficient MRM function that covers models beyond CCAR. Banks can start with the four design considerations we describe here and also look for opportunities to simplify, standardize, and automate the work. Banks should also work

on transparent and streamlined development and validation standards, standardizing validation tests for commonly used model types (for 80 to 90 percent of the inventory), and automating work flow and documentation. By continuing to refine the MRM process, banks can make CCAR easier and ensure that the models they are using for daily, quarterly, and annual decision making are reliable.

*The authors wish to thank Pankaj Kumar from McKinsey's New York office for coauthoring this section.*

# 3. Data

## INVESTING FOR CCAR AND IMPROVED BANKING OPERATIONS

Since the inception of CCAR, gathering reliable and consistent data has been a headache for banks. Banks need data to build models as well as “jump-off” data to run the stress test. In recent years, regulators have been pressuring banks to improve data accuracy, both for individual data elements as well as for aggregated data. The Fed repeated these themes in its feedback to the 2017 CCAR submissions. While some leading banks have made substantial recent progress in improving their data capabilities, most still have a long way to go.

Banks face common challenges, and, as a result, the CCAR process typically requires at least some highly manual work. Most institutions must confront inconsistent data quality—the older the data, the less reliable it is; multiple sources with different inconsistent data classifications feed the CCAR process; and bank data classifications rarely align with Fed reporting requirements. As a result, to complete the CCAR process, banks often have to fall back on manual processes—putting hundreds of people to work entering data in the correct format or cleansing historical data.

Banks have three primary areas of focus related to CCAR data: ensuring foundational capabilities, automating manual processes, and harmonizing CCAR data with broader operational data. Institutions that get the basics right may escape strong regulatory criticism. However, only banks that invest in automation and harmonization can reap the full benefit of the investment in CCAR data that they have already made. Automation reduces costs by streamlining the stress-testing process, but it also expands the art of the possible. Banks with automated and integrated data can improve bank operations—including by feeding the data-analytics systems that will help identify new ways to generate revenue and raise profits.

### 1. Ensuring foundational capabilities

Many banks still need to improve foundational data capabilities to ensure that data quality meets regulatory expectations. Over the past three years, many institutions have made substantial progress, including in defining their data architecture, specifying CCAR reporting standards, and developing and implementing a defined data control framework. Best-practice institutions also are developing rigorous processes to check data quality (including setting up war rooms) and building reporting tools and processes for publishing CCAR schedules. Success in establishing these foundational capabilities requires proper ownership of data in the business (first line of defense) and clearly defined oversight responsibilities within the second line of defense. Banks that have taken these steps have successfully stabilized their CCAR data-reporting processes. Others remain behind, with foreign banking organizations (FBOs) lagging the furthest.

### 2. Automating manual processes

Many banks are now focusing on optimizing the CCAR process and are investing in automation. In addition to helping reduce costs, automation helps banks cut down on errors and rework while increasing the effectiveness of controls. Automation can also help in model performance testing, documentation, and validation. There are three main opportunities. First, as part of the credit-modeling process, technologies such as optical character recognition (OCR) and natural language processing (NLP) enable banks to capture data from physical loan documents more accurately and for less cost, while improving the quality of data underlying CCAR. Second, robotic process automation (RPA) can be used to execute controls and data reconciliations. Third, time-consuming manual review and challenge processes can be automated, freeing employees to devote more time to analyzing and applying CCAR results.



While all banks can digitize more data processes, regional banks may have the best opportunities because of their simpler data environments. Universal banks that have many lines of business can take a more modular approach to automation, implementing new processes incrementally, starting with the highest-impact opportunities.

### 3. Harmonizing CCAR data with bank operating data

While many banks have begun to harmonize CCAR data with bank operating data, most institutions still continue to generate one set of data for regulatory purposes and another for running the bank. Through the CCAR process, banks have built rich data assets. But they have done this work with dedicated teams in a siloed fashion. Rather than using this CCAR data for management reporting, forecasting, and budgeting, they are using entirely different data—not only raising costs but also creating inconsistencies and confusion. By ending this practice and harmonizing data, banks can better manage their data and also satisfy regulators.

These opportunities are particularly relevant for FBOs, which can converge data approaches between their US and domestic operations, including using common data-lake environments and shared-data governance practices.

#### IMPLICATIONS FOR ACTION

Upgrading CCAR data processes and getting them to work with other bank processes is a complex project that will take 6 to 12 months (and longer for universal banks, which may not be ready until the 2019 submission). This leaves only a small window to launch the initiatives and reap the benefits for the 2018 CCAR submission. Banks that wish to do so should ensure that CCAR leadership and the chief data officer (or the CDO equivalent) have agreed on which foundational data capabilities can be implemented by January 2018. The CCAR team should identify which steps of the process it would like to automate and then work with the IT teams to develop a timeline for automation efforts to

deliver new technologies in 2018 or 2019. In those institutions looking to integrate CCAR with business as usual, the head of CCAR should collaborate with the CFO and the chief data officer to identify which CCAR processes can be harmonized with other reporting, budgeting, and forecasting systems.

*The authors wish to thank Brian Wolther from McKinsey's New York office for coauthoring this section.*



# 4. Audit

## WATCHING THE WATCHERS – AUDIT AS A STRATEGIC ASSET

Following the 2017 CCAR filings, the Fed again highlighted weaknesses in internal audit programs. The critique of internal audit has included lack of comprehensive audit planning for capital-planning processes and ineffective testing of risk-management processes and controls. Expectations for a robust and effective internal audit program for capital planning remain high, as the Fed again reminded banks that it expects an internal audit function to oversee the entire capital-planning process with a strong independent review of key processes.

The Fed is not alone in pushing for better performance from internal audit teams. Bank boards and audit committees also want to make sure that internal audit is a robust and reliable “third” line of defense—the last chance to head off an objection to a capital plan.

Recognizing the increased attention and pressure, including from the horizontal review conducted by the Fed over the past year, internal audit functions have been addressing identified weaknesses and reinforcing audit practices across the range of processes and controls in the capital-planning program. We believe that these efforts must continue—even in the face of potential changes to CCAR—as any changes to the frequency or intensity of the regulatory review would come with heightened expectations for internal audit to act as an even stronger third line of defense. At the same time, we expect boards to press for continued improvements in internal audit to ensure a truly independent and robust assessment of the capital-planning process in advance of approving a firm’s capital plan.

Following are five challenges that internal audit departments will need to address:

### 1. Risk identification

Risk identification is another process in which internal audit departments can improve their

oversight. To do this, they should ensure that the end-to-end risk-identification process is comprehensive, that key stakeholders are actively involved in the process (in particular, first-line business owners), and that the prioritization, measurement, and aggregation process is robust. Critically, internal audit should ensure that there are clear linkages between the firm’s identified risks and the scenarios it develops and the models and methodologies used for forecasting. Internal audit must also ensure that these linkages are well documented. By doing these things, internal audit should make certain that the risk-identification program provides the board of directors with an accurate and insightful picture of the bank’s overall risk profile and how it has evolved over time.

### 2. Model risk management

The weaknesses cited in the Fed’s CCAR summary feedback suggest that internal audit still has room to improve its assessments of model risk management. Traditionally, internal audit has focused on evaluating the thoroughness and rigor of the bank’s MRM framework and ensuring that all policies and procedures are followed by the relevant stakeholders. However, expectations for the role of internal audit have evolved to focus more on the quality of model validation. In particular, internal audit is expected to ensure that the quality of validation (including the validation testing conducted and the independent review and challenge performed) are appropriate for the model type and use. Internal audit needs to provide assurance that model validation is playing a robust challenger role—thus ensuring a strong second line of defense.

To meet this higher requirement, internal audit needs to enhance resources, audit processes, and tools. Internal audit should ensure that its staff has the essential technical knowledge and capabilities. Its audit processes and policies should not merely replicate the work done by MRM but provide additional or complementary technical guidance to conduct detailed audit reviews. Finally, internal audit should invest in tools and templates, including

providing sufficient guidance to the auditors to ensure audit requirements are implemented consistently across model types.

### 3. Data and data governance

Data and data governance are ongoing challenges for internal audit departments. They need to develop approaches to effectively and efficiently audit data and assess the effectiveness of data governance across the enterprise. Firms are currently trying to improve data governance and controls (e.g., close monitoring of critical data elements, including data lineage) to keep up with the growing importance of the role that data plays in the CCAR and in their businesses more generally. Internal audit departments need to clearly define their role in auditing data and data governance across the enterprise, build appropriate staff expertise, and develop needed capabilities to employ advanced techniques in their work.

### 4. Competence, skills and stature

Expectations for internal audit departments are rising—both from regulators and from bank boards. The Fed and other regulators expect internal audit to hold the line and ensure that there is a robust third line of defense to buttress the first and second lines of defense as needed. To do this, internal audit departments need to have sufficient stature within the organization. This, in turn, will depend on having recognized competence and influence to identify and escalate key issues. To achieve the necessary stature and influence, internal audit departments need talent with deep knowledge of the business, staff trained to probe and challenge both business processes and business leaders, and the visible support of audit leadership and the board to ensure issues are addressed in a timely manner by relevant stakeholders.

### 5. Staying current on changes in risk management

Banks continue to adopt new technologies and business processes, and audit departments need to keep up. Banks are digitizing, automating, and

applying advanced data analytics to make capital planning more efficient. Internal audit departments need to update their approaches so they can understand how these systems and technologies are working across the enterprise. To do their work, internal audit departments need to be up to date on the use of technology and advanced techniques—both to determine which solutions to adopt to keep up with the businesses and functions they are auditing and to find ways for doing their work more efficiently.

### IMPLICATIONS FOR ACTION

No matter what the 2017 CCAR feedback says, internal audit departments can take steps now to start addressing these five challenges. Audit departments should ensure that roles and responsibilities across the three lines of defense are clear and should consider mapping current roles and responsibilities to assess comprehensiveness of coverage and ensure that overlaps and gaps are addressed. This could include adding automated testing tools or adopting new analytical techniques to help automate manual tasks. Internal audit departments should also assess what talent they may need to add in areas such as model risk management and advanced analytics to bolster internal audit capabilities.

*The authors wish to thank Matthew Freiman from McKinsey's Toronto office for coauthoring this section.*



# Conclusion

The 2017 CCAR cycle has reinforced important themes in the regulation of large and complex banks. Overall, banks have built expertise in the processes needed to meet regulatory demands. However, regulatory uncertainty remains a challenge. The industry has valid concerns about both the overall direction of bank regulation and the impact of changing requirements.

As we noted at the outset, there are no indications that the Fed will relax standards, even if the CCAR process is modified. The Fed will continue to push for banks to build a very rigorous process to assess the kinds of risks that appear only under stress and to continue to build the controls developed for CCAR into business-as-usual activities. The goal is clearly to integrate CCAR-level controls across bank operations so that banks are compliant every day, not just when they prepare an annual snapshot for the Fed. Forward-looking banks have gotten this message and are now looking for ways to leverage their investments in CCAR to create better ways of operating and boost overall performance.

In the 2017 CCAR results, we see that, to varying degrees, banks are making progress in integrating the data and processes that they use for the CCAR exercise into business-as-usual operations. Having one set of data and procedures for compliance and another for routine operations is clearly inefficient. Boards are correct to push their organizations to harmonize CCAR processes for risk identification, model risk management, global-market-shock testing, and internal audit with bank processes. This will give boards confidence in the data and insights they use for capital planning and other decisions and can improve routine operations. More important, banks can move toward making CCAR-level risk management a standard for daily bank operations—ensuring the safety and soundness that is the ultimate goal of regulation.

The implications of the 2017 CCAR results are clear: banks should continue to invest strategically in the capabilities that they need for the CCAR process,

not only to make the process smoother but also to improve bank safety and operations. Investments in new technologies such as robotic process automation can help put an end to the manual processes that banks still rely on for CCAR and take costs out of routine risk processes. Integrating stress-testing outputs in budgeting, M&A, and other activities can improve decision making across the bank. Routine stress testing can also generate rapid “what if” analyses to help banks respond to sudden shifts in the environment. Data aggregation for stress testing can support management and board reporting. To get the full benefit from their CCAR investments, most banks will need to continue to fine-tune and automate their stress-testing processes.

As banks move into the next CCAR cycle, they have much to do. The banks that have been participating in CCAR from the start should be drawing road maps for how they will embed CCAR processes into their operations in the coming months—and figuring out what the costs will be. For the newcomers, there is much catching up to do. But these banks can apply the lessons of the banks that have been building their CCAR capabilities for years.

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[Sarah Dahlgren](mailto:Sarah_Dahlgren@mckinsey.com) (Sarah\_Dahlgren@mckinsey.com) is a partner in McKinsey’s New York office, where [Lorenzo Serino](mailto:Lorenzo_Serino@mckinsey.com) (Lorenzo\_Serino@mckinsey.com) is a partner; [Matthew Steinert](mailto:Matthew_Steinert@mckinsey.com) (Matthew\_Steinert@mckinsey.com) is an associate partner in the Toronto office; and [Olivia White](mailto:Olivia_White@mckinsey.com) (Olivia\_White@mckinsey.com) is a partner in the San Francisco office.

