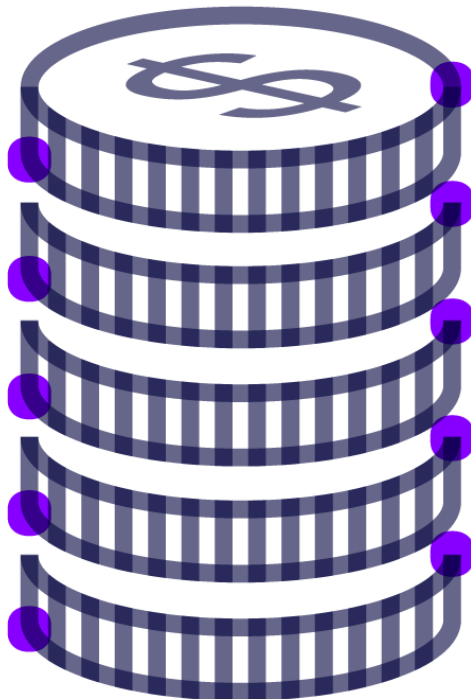


## CCAR benchmark 2018

### Summary report

January 2019



## About this report

This report summarises some of the key findings of the CCAR benchmark 2018, which is an annual study conducted in collaboration with ORX member and non-member firms.

The objective of this study was to provide participants with a benchmark of their CCAR operational risk modelling methods and outputs. The study also took a deeper look at other topics than it had in previous years, such as material risk identification processes.

To learn more about how to sign up to the CCAR benchmark 2019, please see page 4 of this report.

## Executive summary

The Comprehensive Capital Analysis and Review (CCAR) was implemented in 2009 and continues to present challenges to the firms who are subject to it, as the requirements are continuously changing and evolving. These changes are reflected in the results of this benchmark, which collected information on submission ratios, forecasting inputs used, modelling approaches, material risks, validation processes, and top challenges.

### SME inputs continue to increase for stressed forecasting

The use of expert input continues to increase in the case of forecasting under stressed scenarios, although baseline approaches have remained mostly unchanged. This is a continuation of the trend we observed last year – subject matter expert (SME) input and business judgement continue to take center stage over more traditional quantitative modelling aspects, both in usage and focus of challenge. Firms continue to use SME input and business intuition to guide, gauge and challenge the results of traditional models.

### Scenario analysis and risk identification programs are still in focus

Although not all bank holding companies (BHCs) are required to include quantified results from scenario analysis, all participants in this study did. The main reason given for incorporating scenario analysis and

idiosyncratic events was to capture losses that are not covered by other modelling or as an overlay. This is driven by the need to identify and quantify risks which are material to the BHC. Formal risk identification programs have been put into place to identify the BHC's top material risks and ensure that they are considered in the various stress scenarios.

### Some links to the external environment

Most banks identify a significant relationship between losses in execution, delivery and process management, and the macroeconomic environment. Specific factors include market volatility, foreign exchange volatility, credit spread and term premiums.

The only other event types where the majority of banks have found a significant link to the external environment are clients, products and business practices, and external fraud.

### Risk taxonomies are on the rise

Increasingly, firms are linking their top risks to internally developed taxonomies. In a recent ORX study<sup>1</sup>, it was clear that a growing number of firms are establishing operational risk taxonomies which much more accurately capture their material risks than Basel event based taxonomies do. As these taxonomies are still in development, some firms find linking to internal or external factors a challenge.

### Legal forecasts

The forecasting of legal losses remains a challenge for many. Typically, a range of information is combined with subject matter expertise to provide estimates. Participants reported that although they now have good relationships with legal teams for this purpose, validating the outcome of the process remains a challenge.

### Data availability and quality are a challenge

There is commonality between the top challenges identified by both SR 15-18 and SR 15-19 firms, with most difficulties relating to data issues. Reliable data is the key to reliable models, and many firms expressed that they either lack suitable data or they cannot rely on it. This is an area where firms will need to take steps to improve in the future.

<sup>1</sup> <https://members.orx.org/orx-publications/developing-industry-operational-risk-taxonomy>

## Forecasting and analysis

### Forecasting

As part of this study, participants were asked to estimate the proportion of their forecasts that were contributed by models, expert input based on scenarios, and input relying on other expert methods. The scenarios discussed in this study are: BHC Baseline, BHC Stressed, FRB Adverse and FRB Severely Adverse.

This year's method choices show that SR 15-18 firms continue to decrease their use of modelled input in all scenario types surveyed. At the same time, the use of scenario-based expert input increased in all four scenarios surveyed.

SR 15-19 firms decreased their modelled input by much higher percentages than 15-18 firms. The use of expert input through scenarios increased in all but the BHC baseline scenario. Expert input relying on other methods showed modest increases or decreases on various scenarios.

### Modelling

Firms rely on various modelling approaches to yield the loss forecast for submissions. Loss forecasting methodologies are based primarily upon the use of both regression and SME input, although a few firms use other approaches, such as structural models and a loss distribution approach (LDA). The process of selecting which models to include into the submission is a mixture of quantitative and qualitative approaches. The average firm selects models from the variable pool to represent the appropriate risks; this is where business intuition and the expertise from SMEs takes on a more prominent role.

### Both internal and external losses are used in forecasting

Historical internal operational risk losses are used by almost all participants for all scenarios. Economic factors and expected outcomes of pending operational risk events are used more in the adverse scenarios, but less in the BHC baseline. Most firms tend to use data going back between 10 and 20 years.

Ninety-one per cent of firms use external loss data as part of preparing their CCAR submissions. External historical loss data is often used in scenario analysis workshops to complement and enrich internal loss data, and help workshop participants understand industry trends.

Alternative ways to use external loss data are either as direct model input or for benchmarking purposes. Several firms stated that they build models using external loss data to compare and benchmark their projections to ensure that they are reasonable.

Macroeconomic factor linkage to operational losses were identified by most firms. EDPM (execution, delivery, and process management), CPBP (clients, products and business practices) and external fraud were identified as the event types most linked to macro factors.

### Idiosyncratic events

It is a general requirement for firms to consider all their top material risks in their submissions. Idiosyncratic events satisfy this by looking at the types of activity the firm takes part in and the risks that are unique to them.

These events may be different than a typical scenario analysis exercise, as they are generally on a wider scale, or impact multiple areas or risks of the business. However, a scenario analysis exercise may be used to quantify an idiosyncratic risk. Although it is required for most firms to include idiosyncratic events, all firms consider including them.

### Scenario analysis

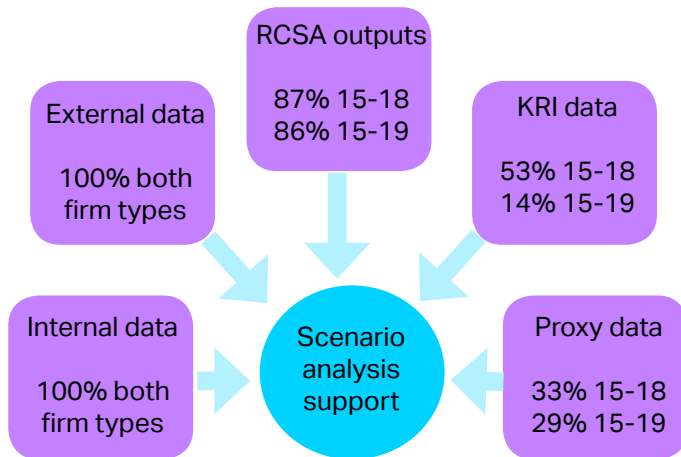
All firms stated that they incorporate results from scenario analysis exercises into their 2018 CCAR submissions, and all firms plan to incorporate scenario analysis results into their 2019 CCAR submissions as well. Firms were fully aligned on incorporating scenario analysis results into the BHC stressed scenario.

Scenarios can be used as an overlay to current modelling techniques to account for material risks to the bank, which are not well captured elsewhere.

### Internal and external data, along with RCSA outputs, are the primary supports for quantified scenarios

Although there are several sources of information which can be used to support the quantified outputs from scenarios, firms strongly rely on a mixture of both internal and external data as supporting inputs for their scenario analysis exercises. RCSA (risk and control self-assessment) outputs are also commonly used as support, whereas key risk indicator (KRI) and proxy data are not as commonly used (figure 1, next page).

Figure 1. Data used to support the quantified impact from scenario analysis



## Legal losses

The estimating and forecasting of legal losses for submissions use several different elements and approaches, which could be termed, “a bit of art, a bit of science”. Various items of data and information, such as reasonably possible estimates, legal reserves, historical averages, model outputs, and specific legal losses come together in a variety of ways for each scenario. Other elements mentioned by those surveyed were SME input, scenario analysis results, external data/precedents, and stress ratios against the base.

Historically the two barriers to overcome in this process have been the sensitivity to legal matters and engagement from legal teams, but many firms are making strides to overcome these challenges.

## Risk identification

Risk identification is an area where there are more differences found between the approaches used by SR 15-18 and SR 15-19 banks and more comments from firms regarding challenges were made in this area.

### Development and assessment

More than half of firms under SR 15-18 guidance had developed a material risk identification program specifically to support CCAR, while the majority of SR 15-19 firms leveraged ERM frameworks which were already in place. Broadly, those who indicated that they leverage an ERM framework commented that their firm have enterprise-wide risk identification programs which are not limited to only operational risk.

There are some mixed practices between different firms: whether they assess risk under normal, stressed or both conditions, but firms generally agree that they assess for both inherent and residual risk. Firms are relatively split regarding their articulation of material risks – there are three ways that firms may do this: by absolute thresholds in loss, scorecards measurements, or by other methods such as through challenge sessions.

An area where both firm types have increasingly agreed upon is linkage of material risks to their taxonomies.

## Validation

SR 15-18 firms typically apply a similar level of rigor to the validation of qualitative modelling techniques than to quantitative modelling techniques. SR 15-19 firms are equally split between those using similar rigor and those being less stringent.

Firms typically use processes to validate their results, but may also use challenge models or external data to benchmark their modelling.

No firm consulted a third party to support the validation process. Involvement from model validation and development teams can be seen for the modelling elements, while group operational risk, model validation, and audit teams are becoming more involved in the validation of non-modelling elements.

However, validating of expert inputs remains the largest challenge to firms.

## Top challenges

Through comments from participants, there are four main areas identified that present a challenge. In order of ranking, they are:

1. Data-related issues
2. Regulatory guidance or feedback
3. Risk identification and selection
4. Idiosyncratic and risk coverage

### Data related issues

Several firms commented that the availability, suitability and quality of data is a challenge to them. Data limitations create model limitations, and when the models are not reliable, it is difficult to defend results to internal challengers and much less to regulators.

### Regulatory guidance or feedback

Unclear instructions, including late delivery of FRB variables, leave banks struggling to determine which approaches to take. Limited, unclear, or no feedback makes it even more difficult for banks to know if their submissions will pass.

### Risk identification and selection

Material risk identification is a topic where firms have been struggling for at least the past two years, with little alignment between firms on what the practice is.

### Idiosyncratic risk and coverage

Like risk identification, firms have specified that the selection and quantification of idiosyncratic scenarios presents a challenge to them. Proper articulation of the logic for including or excluding idiosyncratic events is another point of challenge for firms.

## Sign up for the CCAR benchmark 2019

This report is the outcome of an annual benchmark that ORX has been running for several years. The next CCAR benchmark will begin in Q2 2019. Participating firms will receive a comprehensive project report and individualized factsheets, benchmarking some of their responses to key answers to those of their peers.



To sign up, please contact [support@orx.org](mailto:support@orx.org).

## Participants

The following firms participated in this year's study:

### SR 15-18

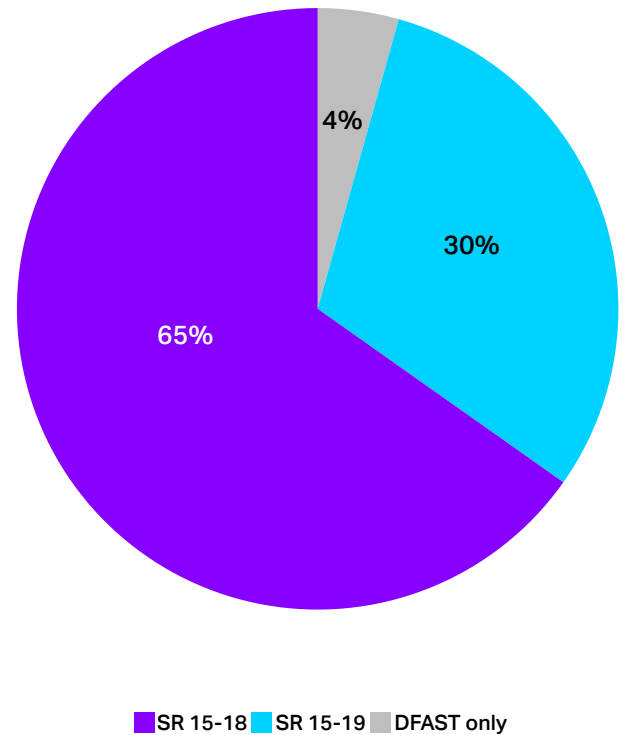
Bank of America	Bank of New York Mellon
Barclays	Capital One
Credit Suisse	Deutsche Bank
HSBC	JPMorgan Chase
Morgan Stanley	PNC Bank
Royal Bank of Canada	State Street
TD Bank	US Bank
Wells Fargo	

### SR 15-19

BMO Financial Group	Discover
Fifth Third Bank	Key Bank
M&T Bank	Northern Trust
Santander	

### DFAST only

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## Managing risk together

ORX believes many heads are better than one. We're here to bring the best minds of the international operational risk community together. By pooling our resources, sharing ideas, information and experiences, we can learn how best to manage, understand and measure operational risk and become less vulnerable to losses.

We work closely with over 90 member firms to develop a deeper understanding of the discipline and practical tools. We set the agenda, maintain industry standards, and garner fresh insights.

ORX is owned and controlled on an equal basis by its members.

For more information about ORX, visit our website at [www.orx.org](http://www.orx.org)

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