

# Stress Testing & Capital Planning: Principles, Program Elements & Common Challenges



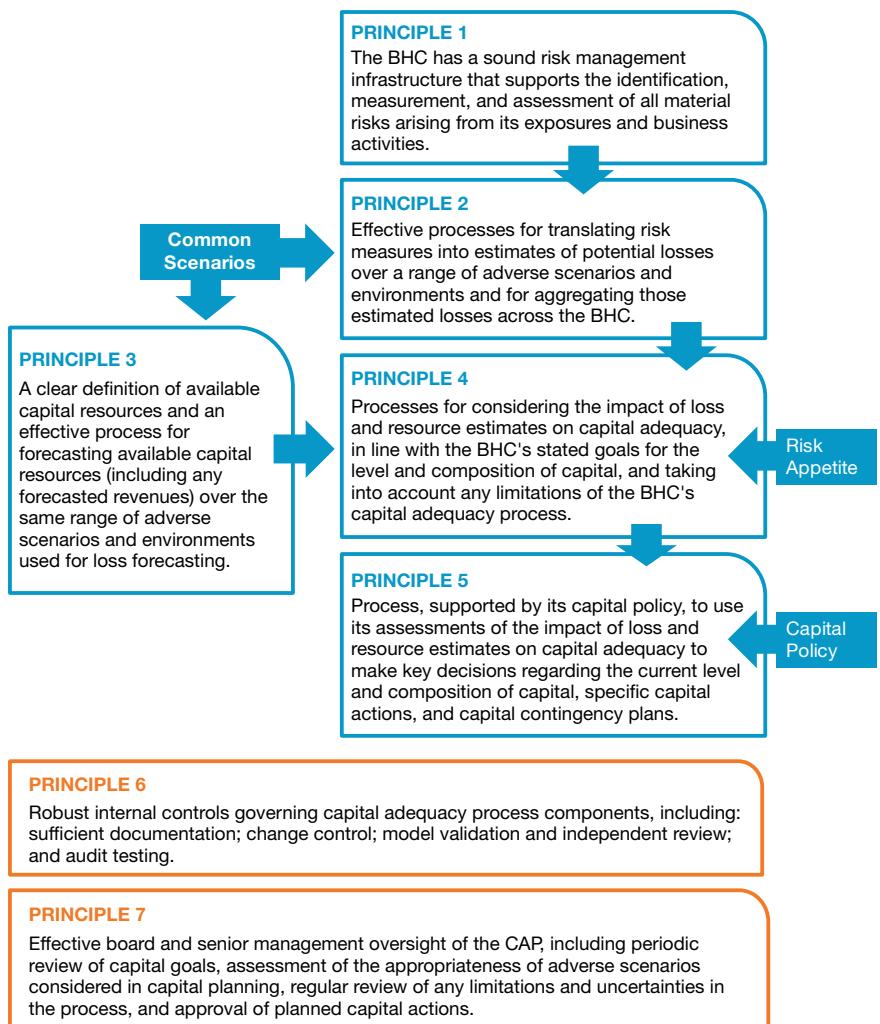
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# 1. Comprehensive Capital Analysis & Review: Guiding Principles

Capital is central to a bank holding company's ability to absorb unexpected losses and continue to lend to creditworthy businesses and consumers. Regulators in the U.S. are setting high standards on a bank holding company's internal capabilities for assessing and stress testing capital adequacy by various scenario conditions as an integral part of their overall risk management and capital planning framework. Stress testing and capital planning has gone through multiple iterations and evolved significantly over time since the Supervisory Capital Assessment Program (SCAP) review was initiated in 2009.

## Seven Principles of The Comprehensive Capital Analysis & Review Program



Recent rulemaking and guidance have set high expectation on a bank holding company's framework for stress testing and capital planning processes, system and governance through the seven principles of the Comprehensive Capital Analysis & Review (CCAR) program.

## 2. Key Elements

A program like CCAR has multiple implications for bank holding companies (BHCs) who need to address functional and technical objectives stemming from the expectations set forth by regulators, in addition to the submission of mandatory monthly, quarterly, semi-annual and annual reporting via the FRY-14 templates. The table calls out key program elements related to each of the principles; and high level objectives are listed further below.

### Key Program Elements

<b>Foundational Risk Management</b>	<ul style="list-style-type: none"><li>• Risk identification</li><li>• Risk measurement</li><li>• Risk management</li></ul>
<b>Internal Controls &amp; Governance</b>	<ul style="list-style-type: none"><li>• Internal audit</li><li>• Model validation</li><li>• Policies &amp; procedures</li><li>• Change controls</li></ul>
<b>Scenario Design</b>	<ul style="list-style-type: none"><li>• Established processes</li><li>• Thoughtfully tailored scenarios (portfolio, geography drivers)</li><li>• Narrative linking scenario and unique vulnerabilities</li></ul>
<b>Capital Policy</b>	<ul style="list-style-type: none"><li>• Capital target</li><li>• Capital distribution</li><li>• Capital action</li><li>• Capital planning (frequency and triggers for monitoring)</li></ul>
<b>Estimation Methodologies for Losses, Revenues, and Expenses</b>	<ul style="list-style-type: none"><li>• Quantitative basis</li><li>• Qualitative/expert adjustments</li><li>• Conservatism &amp; credibility</li><li>• Documentation</li></ul>
<b>Assessing Capital Adequacy Impact</b>	<ul style="list-style-type: none"><li>• Aggregate projection</li><li>• Balance sheet &amp; RWA</li><li>• Adequate ALLL &amp; reserves</li><li>• Centralized audit groups</li></ul>

### Functional Objectives

- An integrated portfolio view from a risk perspective
- Intra risk diversification and allocation that is measurable
- Reconciliation between risk and finance views
- Definition and use of common scenarios for loss forecasts, stress testing across risk types as well as for revenue and capital forecasts
- Loss forecasting and stress testing processes that are repeatable and consistent
- A balance between qualitative and quantitative factors

### Technical Objectives

- A robust and scalable information architecture and risk governance organizational structure to perform the CCAR aggregation, stress testing and reporting in a efficient and repeatable manner
- Hierarchy, lineage and data governance around KPI / KRI's supported by a robust data dictionary and data governance process
- Data quality and integrity of reports through risk data governance and lineage analysis
- Demonstration of the adequacy of the processes

### 3. Common Pitfalls & Challenges

Regulators have pointed out the following areas where the BHCs continue to fall short of expectations; these span across scenarios, modeling techniques, capital policy, capital planning and governance:

- Not being able to show how all their risks were accounted for in their capital planning processes
- Using stress scenarios and modeling techniques that did not address the particular vulnerabilities of the BHC's business model and activities
- Generating projections for at least some components of loss, revenue, or expenses using approaches that were not robust, transparent, and/or repeatable, or that did not fully capture the impact of stressed conditions
- Having capital policies that did not clearly articulate a BHC's capital goals and targets, did not provide analytical support for how these goals and targets were determined to be appropriate, and/or were not comprehensive or detailed enough to provide clear guidance about how the BHC would respond as its capital position changed in different economic circumstances
- Having less-than-robust governance or controls around the capital planning process, including around fundamental risk-identification,-measurement, and – management practices that are among the critical elements that support robust capital planning

The table lists a few topics that are emerging into focus this year, as the CCAR program evolves and matures across the years, shaped by healthy collaboration between regulators and the banking industry.

#### Emerging Focus

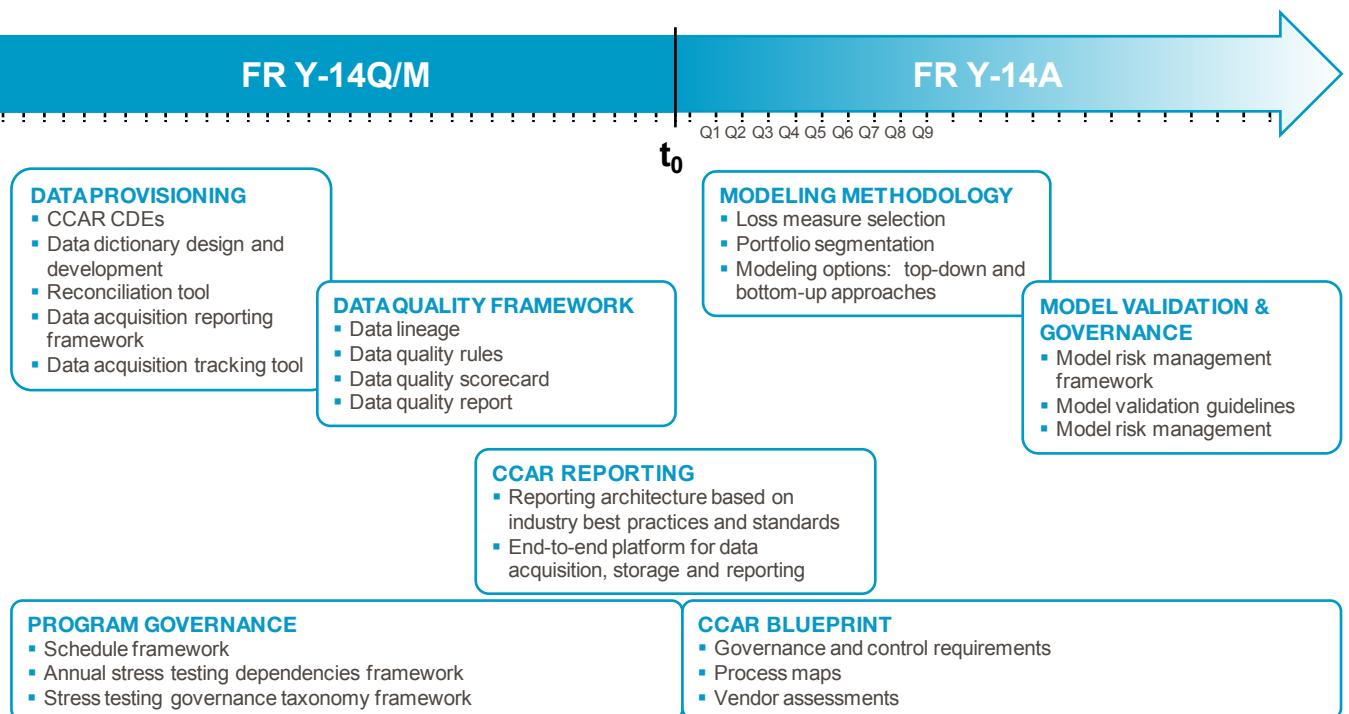
<b>New Models</b>	<ul style="list-style-type: none"> <li>• Granularity/segmentation</li> <li>• Challenger/benchmark models</li> <li>• Macro sensitization</li> <li>• Integration of modeling efforts</li> <li>• Back testing and other validation efforts</li> </ul>
<b>Non-Credit Risks</b>	<ul style="list-style-type: none"> <li>• Liquidity (CLAR, Basel III LCR)</li> <li>• Operational risk</li> <li>• Business (Idiosyncratic) risk</li> <li>• Reputation risk</li> </ul>
<b>"Model Risk"</b>	<ul style="list-style-type: none"> <li>• "Inherent" model risk</li> <li>• Model misspecification</li> <li>• Model uncertainty</li> <li>• "Model implementation" risk</li> <li>• Model risk buffer</li> </ul>
<b>Process Improvements</b>	<ul style="list-style-type: none"> <li>• Process efficiency</li> <li>• Governance</li> <li>• Version &amp; change control</li> <li>• Auditability &amp; traceability</li> <li>• Document &amp; model inventory</li> <li>• Automation &amp; platform solutions</li> </ul>

In our view, the issues call for an integrated solution platform that can aggregate results from various 'satellite' models involved in the CCAR process and drives efficiency in the orchestration of the data from various departments within the BHC to produce the capital calculation and the FRY schedules, while meeting stringent data quality certification and data lineage requirements.

# 4. Capgemini Solutions & Project Experience

Capgemini's Financial Services team has helped numerous clients in the U.S. with their stress testing and capital planning program across the various functional and technical areas. We offer solutions that help address the monthly and quarterly data submissions (FR Y 14M/14Q), with services focused on data aggregation and reporting; as well as solutions to help with the semi-annual/annual capital projections (FRY 14A) which require substantial effort in the quantitative modeling and model validation areas. Relevant to both, we provide services around program assessment, governance and documentation.

## Solutions to Address Monthly and Quarterly Data Submissions



Based on our experience with clients, we have developed a set of accelerators to help reduce the risk, time and cost involved in such projects.

## Capgemini Accelerators for Risk & Compliance

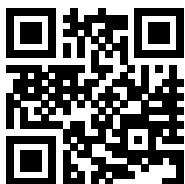
<b>Models</b>	<ul style="list-style-type: none"> <li>• Model Validation Services &amp; Templates</li> <li>• CCAR Maturity Framework</li> <li>• Top-Down/Bottom-Up Models</li> <li>• Model Development &amp; Documentation Services</li> <li>• Scenario Generation Accelerator</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Reporting Framework</li> <li>• Dashboard Design Capabilities</li> <li>• Dashboard Development Capabilities</li> <li>• Taxonomy Development and Hierarchy Management Analysis</li> </ul>
<b>Data</b>	<ul style="list-style-type: none"> <li>• Enterprise Information Maturity Model</li> <li>• Data Quality Framework and Rules</li> <li>• CCAR Business Glossary</li> <li>• Business Dictionary Design and Development</li> <li>• Architecture</li> </ul>
<b>Governance</b>	<ul style="list-style-type: none"> <li>• MRM Policies, Procedures &amp; Templates</li> <li>• MRM Platform Requirements &amp; Vendor Selection</li> <li>• MRM Platform Development</li> <li>• Model Risk Quantification</li> <li>• Model Risk Reporting</li> </ul>

The table below shows a representative snapshot of CCAR and Enterprise Risk Management projects:

## Our Select CCAR & ERM Experience

Engagement	Description
<b>CCAR Annual Process for a Top 5 U.S. Bank</b>	<ul style="list-style-type: none"> <li>• CCAR, Credit Loss Forecasting Model development for loan (retail and wholesale) and securities portfolios including model validation support.</li> </ul>
<b>SCAP/DFAST for a Large Regional Bank in the U.S.</b>	<ul style="list-style-type: none"> <li>• Stress testing model development and support (including supporting the bank have models validated by external vendor)</li> <li>• Model documentation and operationalization</li> <li>• RAROC model design, development and implementation including testing</li> </ul>
<b>CCAR Annual Process for a Top 20 U.S. Bank</b>	<ul style="list-style-type: none"> <li>• Model validation</li> <li>• For retail scorecards and market risk models</li> <li>• Development of model validation guidelines</li> </ul>
<b>CCAR A/Q/M Processes for a Top 30 U.S. Bank</b>	<ul style="list-style-type: none"> <li>• CCAR process analysis and platform selection</li> <li>• Model Validation</li> <li>• For PPNR models, Commercial &amp; Retail Credit Models, Operational Risk models, AML models</li> <li>• Development of Model Risk Management policies, procedures, and templates</li> <li>• Assessment of MRM Platform</li> </ul>
<b>CCAR Q/M Process for a Regional U.S. Subsidiary of a Global Bank</b>	<ul style="list-style-type: none"> <li>• CCAR Submission support</li> <li>• Model validation for retail scorecards</li> </ul>
<b>CCAR Q/M Process for a Large Global Bank</b>	<ul style="list-style-type: none"> <li>• CCAR submission support</li> </ul>
<b>Model Risk Management for a Top 30 U.S. Bank</b>	<ul style="list-style-type: none"> <li>• MRM Platform Implementation</li> </ul>

For more information,  
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visit: [www.capgemini.com/risk](http://www.capgemini.com/risk).



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