Capital Stress Testing

Ongoing Capital
Management and
Governance Expectations

Session Objectives

1. Expectations for board and senior management oversight
2. Process formalization and internal controls
3. Ongoing capital adequacy evaluation and enterprise level performance monitoring
4. Capital contingency planning
5. Use of capital in business/transaction level performance analysis

Objective 1: Governance

1. **Expectations for board and senior management oversight**
2. Process formalization and internal controls
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Board of Directors

- Board of directors has ultimate oversight responsibility and accountability for the CAP
  - Even if it is not intimately involved in the details
- Responsibilities include:
  - Setting key strategies and making decisions
  - Defining the culture of the organization
  - Setting the “tone at the top”
  - Reviewing and approving the capital policy at least annually
  - Providing robust challenge of the CAP
- Board should make informed decisions on capital adequacy and not just ratify recommendations made by senior management

Board of Directors

- Board should receive sufficient information to:
  - Understand the BHC's material risks and exposures
  - Confirm that the CAP is functioning as it should
  - Inform and support its decisions on capital adequacy and planning
- CAP information should include detail on:
  - Stress scenario(s) and material risk capture
  - Capital measures under current circumstances as well as on a post-stress, *pro forma* basis framed against capital goals
  - Key drivers of loss and revenue changes under stress conditions
  - Key assumptions and sensitivity of capital levels to assumptions
  - Model validation and issues identified by audit
  - Key limitations, assumptions, and uncertainties as well as mitigation strategies

Board of Directors

- Board should review CAP information at least quarterly, or when there are developments affecting capital adequacy
  - Key challenge – level of detail for board reports
    - Should summarize issues but also provide access to key details as needed
- Boards with stronger practices:
  - Critically evaluate and challenge CAP information by asking questions and requesting additional information in key areas
  - Understand that stress testing results are estimates and should be viewed as part of a range of possible results
  - Discuss weaknesses identified in the CAP, their impact on stress testing results, and whether immediate mitigating action is needed
  - Discuss whether the range of potential stress scenarios used to assess capital adequacy was sufficiently severe and relevant

Senior Management

- Senior management is responsible for implementing CAP activities and ensuring they function effectively
  - Including all CAP control functions
- Responsibilities include:
  - Ensuring stress scenarios are sufficiently severe and address the BHC's material risks and vulnerabilities
  - Making recommendations to the board about capital goals and capital actions, including distribution decisions
  - Ensuring that proposed capital goals have sufficient analytical support and fully reflect the expectations of key stakeholders
  - Identifying weaknesses, limitations, and uncertainties in the CAP
  - Developing remediation plans for any weaknesses in the CAP

Senior Management

- Senior management teams with stronger practices:
  - Understand the imprecision and uncertainty in predicting future outcomes when reviewing stress testing results
  - Maintain an ongoing assessment of all capital planning areas
  - Identify, document, and communicate any weaknesses, assumptions, limitations, and uncertainties to the board
  - Develop clear remediation plans with specific timelines for resolving identified weaknesses
  - Adjust capital plan recommendations to the board, including capital actions, based on identified weaknesses and uncertainties
  - Conduct sensitivity analysis and provide results to the board
  - Continually update the CAP based on evaluation of performance

Objective 2: Process Formalization & Controls

1. Expectations for board and senior management oversight
2. **Process formalization and internal controls**
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Process Formalization

- Firms should ensure they have policies and procedures covering the entire CAP, including a specific capital policy, to:
  - Ensure a consistent and repeatable process for all CAP components
  - Provide transparency to third parties trying to understand the CAP
- Policies and procedures should:
  - Be comprehensive and relevant to their use in the CAP
  - Be developed and applied consistently across the CAP
  - Define roles and responsibilities of groups/individuals involved in the CAP
  - Include a formal process for policy exceptions and escalations
  - Outline the change control process
  - Be reviewed and updated at least annually

Process Formalization

- Red flags that policies were written as a compliance exercise and are not serving as governing documents:
  - Policies do not clearly outline roles and responsibilities
  - Policies lag or are inconsistent with current practice
  - Process changes are made without adhering to policy requirements
  - Policies are violated with no protocol for approval
  - Exceptions are made frequently
  - Policies are not referenced by management or staff when making decisions or taking actions

Internal Controls

- Internal control framework should:
  - Provide confirmation that all aspects of the CAP are functioning as intended
  - Ensure separate CAP components come together in a coherent manner
  - Include the following control elements:
    - Regular and comprehensive review by internal audit
    - Robust and independent model review and validation practices
    - Comprehensive documentation, including policies and procedures
    - Change controls (see Objective 3)
  - Encompass the entire CAP, including:
    - Risk measurement and management systems used to produce input data
    - Methodologies used to generate loss, revenue, and balance sheet estimates
    - Aggregation and reporting framework
    - Process for making capital adequacy decisions

Internal Controls: Internal Audit

- Internal audit should evaluate the full end-to-end process, not just the individual components, to:
  - Ensure the CAP is functioning as intended
  - Ensure execution is in line with internal policies and procedures
- Internal audit should also:
  - Review how deficiencies are identified, tracked, remediated
  - Report regularly on the status of the CAP and key findings to senior management and the board
  - Have staff with the appropriate incentives, competence, and influence to identify and escalate key issues
  - Have the stature to ensure concerns are addressed in a timely manner

Internal Controls: Model Validation

- All CAP models should be validated for their intended use (SR 11-7)
  - Including all judgmental aspects and model adjustments
  - Models originally developed for ongoing business activities must be validated for use under stressed conditions
- Independent validation and review process should include:
  - Evaluation of conceptual soundness
  - Ongoing monitoring that includes verification of processes and benchmarking
  - Outcomes analysis that includes back-testing (as appropriate)
- Higher-risk and higher-impact models should receive additional attention and be subject to more frequent validation

Internal Controls: Model Validation

- Models should be subject to “effective challenge” as part of validation
  - Effective challenge requires validation staff that have:
    - Necessary technical competencies
    - Sufficient stature within the organization
    - Appropriate structural and/or functional independence
    - Clear incentives to evaluate models objectively and critically
- BHCs should compensate for models that have not been validated or that have identified weaknesses
  - Compensating controls may include:
    - Restricting model use
    - Using benchmark/challenger models to assess primary model output
    - Conducting additional sensitivity analysis
    - Applying conservative, well-supported adjustments to model output

Internal Controls: Model Validation

- Outcomes analysis of stress testing models can be challenging
  - Most BHCs have limited realized outcomes against which to assess loss, revenue, and expense projections under stressful scenarios
  - BHCs should compensate for the inherent challenges by:
    - Conducting sensitivity analysis
    - Using benchmark/challenger models
- Overall, as part of model risk management (MRM), firms should:
  - Maintain an inventory of all models used in the CAP
  - Be transparent about the validation status of all CAP models
  - Acknowledge shortcomings in MRM and have remediation plans in place

Internal Controls: Process Change Controls

- BHCs should have strong change controls that:
  - Allow for process improvements to be integrated into the CAP
  - Define the bounds of management discretion
  - Ensure a transparent audit trail for material process changes
  - Are vital to maintaining formal and repeatable processes over time
- Key process change controls include:
  - Security controls (i.e., access and editor rights)
  - Documentation, escalation, and approval requirements
    - For process changes, deviations from policy, limit breaches, etc.
  - Maintenance of the policy environment to ensure policies, procedures, and roles/responsibilities are consistent with current practices

Internal Controls: Documentation

- All aspects of the CAP should be clearly and comprehensively documented, including:
  - Key assumptions, weaknesses, limitations, and uncertainties
  - Capital decisions and the information used to make them
- Documentation should:
  - Contain sufficient detail
  - Accurately describe the BHC’s practices
  - Include comprehensive documentation from third party vendors
  - Allow for review and challenge
  - Provide relevant information to decision-makers

Objective 3: Ongoing Capital Adequacy Evaluation

1. Expectations for board and senior management oversight
2. Process formalization and internal controls
3. **Ongoing capital adequacy evaluation and enterprise level performance monitoring**
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Ongoing Capital Adequacy Evaluation

- Conducting *pro forma* financial analysis under stress conditions serves as the foundation for capital adequacy evaluation
- As banks enter the planning horizon, they should maintain detailed reporting of actual financial performance against plan
- This analysis serves a variety of purposes:
  - Serves as a “test” of the quality of the estimation processes used to develop the *pro forma* financial analysis
  - Provides updated information to senior management and the board, which can serve as the basis for adjusting capital actions
  - Can serve as the basis for discussions around unexpected variances to planned results given material events within the planning horizon

Ongoing Capital Adequacy Evaluation

“Plan Versus Actual” Variance Analysis

- Banks evaluate their performance to plan at a variety of levels:
  - At the enterprise level
  - At the “risk” level (e.g. all estimated credit losses across portfolios versus actual)
  - At the business unit level
- And over various time horizons:
  - Quarterly with regular “re-baselining” or correcting for time-period variances
  - Over longer time horizons with different variance decompositions
- Best practice is conduct the analysis across various business/risk “dimensions” and over different timeframes

Ongoing Capital Adequacy Evaluation

Methods of Variance Analysis

- Depending on the question that management seeks to address, various methods of variance analysis may be appropriate:
  - ***Total Forecast Error:*** given both the forecasted economic environment (as described in the scenarios) and the translation of that environment into bank performance, how different were actual results (baseline analysis)?
  - ***Total Estimation Error:*** re-estimating results over some time horizon, based on the actual economic environment experienced, how different were actual results from those forecast?
  - ***Total Forecasting Model Error:*** re-estimation of results based on actual economic environment experienced, without the application of management adjustments to results.

Objective 4: Capital Contingency Planning

1. Expectations for board and senior management oversight
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Capital Contingency Planning

- Contingency planning should address unanticipated capital shortfalls
  - Addresses potential underestimation of risks/capital needs or overestimation of capital supply
  - Direct linkage to stress testing
  - Levers available across range of scenarios
- Contingency planning should define a set of capital triggers and events that would correspond with response actions
  - Triggers should provide an early warning sign of capital deterioration
  - Triggers for both baseline and stress scenarios and measured against the BHC’s capital targets in those scenarios
  - Triggers for other metrics and events that measure or affect the actual or perceived financial condition of the BHC

Capital Contingency Planning

- Contingency plan should document analyses conducted, options developed and planned actions across a range of scenarios
- Potential actions could include reducing capital demand or increasing capital supply
  - Reducing risk exposures
  - Asset sales
  - Reducing/eliminating dividends, stock buybacks
  - Raising capital or changing mix
- Actions should be flexible enough to work in a variety of situations and be realistic for what is achievable during periods of stress
  - BHCs should assess the feasibility of potential actions during stressful conditions
  - BHCs should rank potential actions according to ease of execution and impact
  - BHCs should understand consequences of actions, including impacts on future capital raising activities

Capital Contingency Planning

- Governance process should ensure that contingency plans are regularly reviewed and updated as appropriate
  - At least annually and, for example, when there are material changes to the BHC's organizational structure or strategic direction or to capital structure, credit quality, and/or market access.
- In some cases tie to firms' recovery and resolution plans
- Key questions:
  - Are contingency plans comprehensive and realistic, particularly for times of stress?
  - Do contingency plans incorporate reasonable trigger levels and associated realistic response actions that are aligned to help ensure that the BHC remains above its stated capital goals through stressful conditions?

Example: Capital Contingencies

Detailed below are examples of Capital Contingencies that a firm may undertake to preserve Capital:

- ***Circumstance* – GDP rapidly declines and breaches internal triggers**
  - *Management Action – Share repurchases are suspended during the quarter in which the GDP decline occurs*
- ***Circumstance* – GDP continues its decline**
  - *Management Action - Share repurchases are permanently suspended for the remainder of the scenario*
    - *Planned common dividend increases are deferred*
    - *Bank dividends to Parent are reduced*
- ***Circumstance* – Following a significant deterioration in GDP, the trough of the crisis is reached**
  - *Management Action – Bank dividend payments to the Parent are further reduced*
- ***Circumstance* – A strong economic recovery occurs boosting GDP during the remainder of the scenario**
  - *Management Action – A designated team is tasked with monitoring Parent liquidity and Bank dividend capacity as the bank recovers from the severe stress period*

Objective 5: Use of Capital in Profitability Analysis

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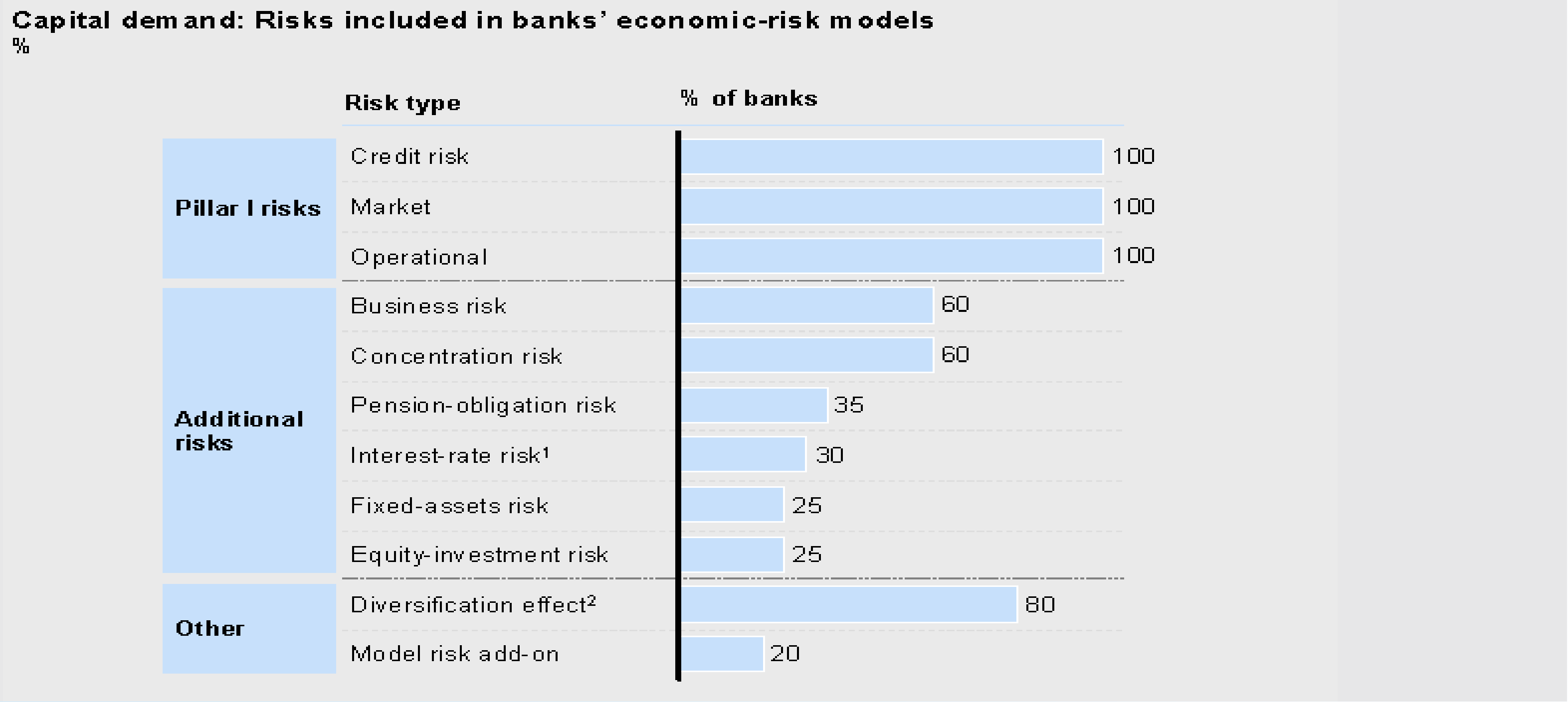
Use of Capital in Profitability Analysis

- Use of the capital analytics is value not only for assessing consolidated capital adequacy:
  - “Risk adjusted return measures” use capital measures and allocation approaches to determine whether compensation is adequate given risk.
  - These approaches can be applied at the transaction, customer, or business level
- These uses are more “best practices”, but banks should attempt to develop processes for better evaluating the quality of earnings and returns based on a full “cost evaluation”, which includes:
  - Cost of capital
  - Cost of liquidity (“funds transfer pricing”)
  - Other allocated fixed costs

Use of Capital in Profitability Analysis

- In developing the “cost evaluation”, banks consider a variety of risks:



Source: 2011 McKinsey Study

Use of Capital in Profitability Analysis

- Relating risk to capital, and considering other cost sources (including funding costs, overhead and other fixed costs, etc.), banks are able to allocate costs to transactions to assess profitability at various levels.

- Measures include:

Category	Observed Metrics
More Favorable	➢ Risk Adjusted Return on Risk Adjusted Capital ➢ Economic Value Added ➢ Return on Risk Weighted Assets ➢ Risk Adjusted Return on Capital ➢ Shareholder Value Added
Standard	➢ Return on Assets ➢ Return on Equity with Economic Capital ➢ Return on Equity with Regulatory Capital ➢ Return on Tangible Common Equity ➢ Regulator Capital Ratios

Use of Capital in Profitability Analysis

- The mathematics and details of the approaches can be sophisticated:
  - Advanced statistical techniques are used to measure unexpected losses and “tail risks”
  - Measures are aggregated by making complex assumptions about correlations and diversification benefits
  - Allocation mechanism introduce a number of additional assumptions and advanced analysis

- But the underlying principle is simple:
  - Banks are required to hold capital
  - Bank capital serves as a “protection” against unexpected losses
  - Banks should therefore seek to employ their resources towards the available opportunities that offer the best risk adjusted returns

Questions?