Finding the Right Balance Between Modeling and Judgment: A Case Study

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Context

• State Street is a custody bank with a liability-driven balance sheet

• Our balance sheet size is driven by our institutional custody deposits more than any other factor

• In 2014, we ran an internal initiative to develop new balance sheet projection models

• All models passed internal model validation, though some with findings or conditions

• The most important of these balance sheet models on our CCAR results is the deposit projection model, given its impact on our balance sheet size and leverage ratio

• Heading into CCAR 2015, we knew that our deposit model was sensitive to certain key assumptions and inputs but felt it was the best model we could build with the data available
Deposit Model Results: Adverse Scenario

Adverse Scenario Deposit Projections

What the model produced

What we expected

Q0  Q1  Q2  Q3  Q4  Q5  Q6  Q7  Q8  Q9

Model Observations

- Results intuitive for many scenarios, but not Adverse
- Business intuition predicts a reduction in excess deposits as short-term interest rates rise

Key Model Limitations

- Limited data history in different interest rate environments
- Few statistically significant variables leading to oversensitivity to certain factors
What Were Our Options?

Pros
- Consistent with ex ante methodology
- Passed validation

Cons
- Adverse scenario results were inconsistent with business intuition

More conservative

Use the Model

Apply an Overlay
- Can still use the model, with an adjustment
- Overlay so large it questions model validity
- Need an approach to calibrate overlay

Less conservative

Our Choice
- Consistent with business intuition in all scenarios
- ‘Substance’ over ‘form’
- Primarily based on judgment
- Difficult and/or no time to validate

Less conservative

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### Support for Alternative, Judgment-Based Approach

| Articulate Model Limitations | • Clear explanation of original model’s limitations  
| | • Why the model failed, not just “results don’t make sense” |
| Apply Structured Judgment | • Develop an alternative, judgment-based approach with a clear, intuitive, and easy-to-follow relationship between risk factors, scenario conditions, and results |
| Provide Empirical Support | • Thorough documentation of all key assumptions, including business rationale, empirical support, and benchmarks from historical or industry experience |
| Conduct Sensitivity Analysis | • Sensitivity of model results to all key assumptions  
| | • Sensitivity of top-of-the-house CCAR results to the use of the alternative approach vs. the original model |
| Governance, Governance, Governance | • Evidence of thorough review and challenge  
| | • Consistency with model governance policies/procedures  
| | • Escalation to appropriate governance committees (e.g., Board of Directors) |

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