

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

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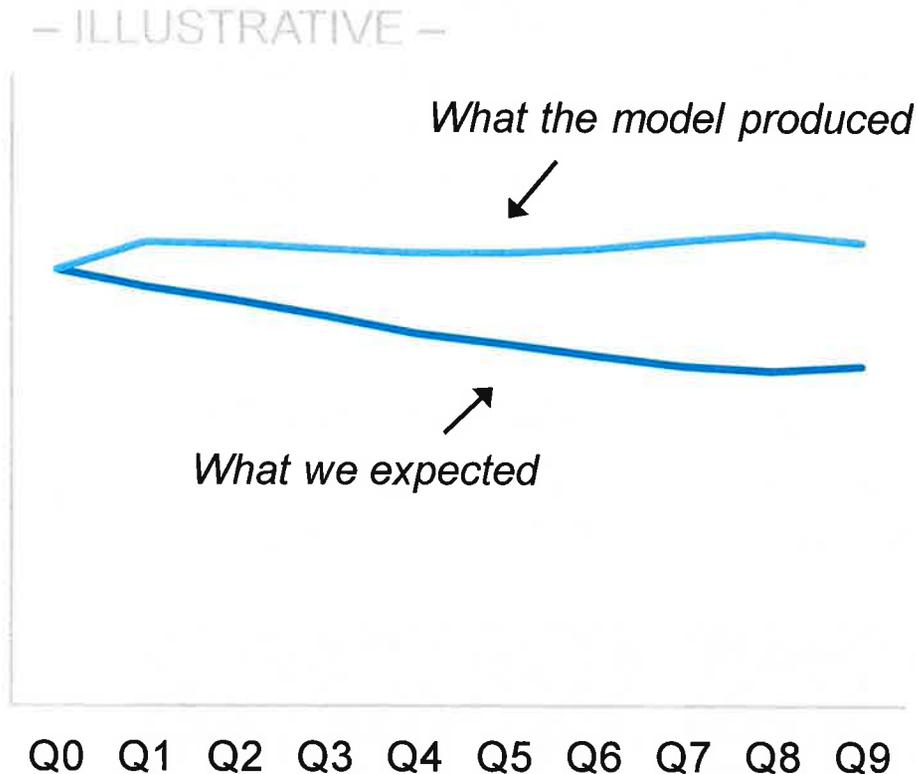


Context

- 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



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 over-sensitivity to certain factors

What Were Our Options?

	Use the Model	Apply an Overlay	<i>Our Choice</i> Develop Alternative Approach
<i>Pros</i>	<ul style="list-style-type: none">• Consistent with <i>ex ante</i> methodology• Passed validation	<ul style="list-style-type: none">• Can still use the model, with an adjustment	<ul style="list-style-type: none">• Consistent with business intuition in all scenarios• ‘Substance’ over ‘form’
<i>Cons</i>	<ul style="list-style-type: none">• Adverse scenario results were inconsistent with business intuition	<ul style="list-style-type: none">• Overlay so large it questions model validity• Need an approach to calibrate overlay	<ul style="list-style-type: none">• Primarily based on judgment• Difficult and/or no time to validate
	<i>More conservative</i>	<i>Less conservative</i>	<i>Less conservative</i>

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)