



PNC's Operational Loss Stress Test Methodology

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Stress Test Assumptions and Approach



Objective

- Forecast expected operational losses by quarter given a specified macroeconomic path

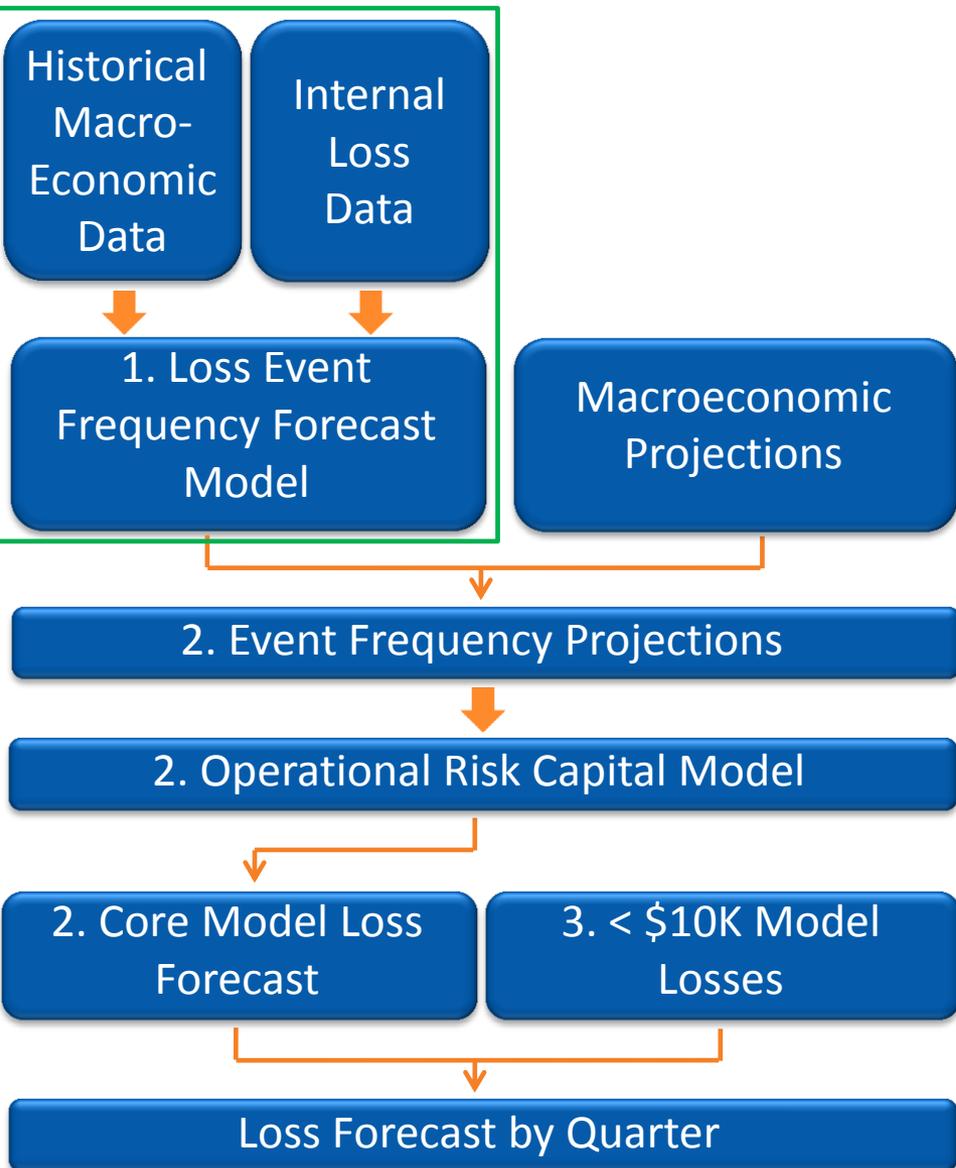
Assumptions

- Expected loss equals expected number of events times the expected severity
- Macroeconomic factors drive the expected number of operational loss events
- Severity does not depend on macroeconomic factors

Approach

- Leverage Advanced Measurement Approach (AMA) capital model for loss forecasting
 - Use the capital model's severity component to calculate expected loss for most risk areas
 - Use scenario analysis inputs to augment (limited) internal loss data for risk areas with thin data

Loss Forecast Model Calculation Flow



1. Estimate event frequency forecast model
2. Use event frequency projections and **components** of the AMA Operational Risk capital model:

- $\text{Loss} = \# \text{ of events} \times \text{model avg. severity}$

OR, for thin data areas

- $\text{Loss} = \# \text{ of events} \times \text{historical avg. severity}$

+

- $\text{scenario frequency} \times \text{scenario loss amount}$

(summed over all scenarios)

3. A separate model estimates average annual losses for events with loss amounts less than \$10K – independent of macro factors

Event Frequency Forecast Groups



Event frequency forecast groups are nearly identical to the capital model's units of measure

Event Frequency Forecast Groups with Macroeconomic Factors

Event Type	Business Area				
	Retail	Mortgage	Commercial	Asset Mgmt.	Corporate / Other
Internal Fraud	Historical average frequency				
External Fraud	See below ¹	Res. delq. rates			
Workplace Safety	GDP per capita				
Employment Practices ²	Historical average frequency				
Clients, Products, Business Practices	GDP per capita				
Execution, Delivery, Process Mgmt.		C-S HPI	GDP per capita, Res. delq. rates		
Damage to Physical Assets ²	Historical average frequency				
Business Disruption, System Failure ²	Historical average frequency				

¹ Retail, External Fraud: Unemployment, Residential delinquency rates

² The event frequency has only a small effect on forecasted losses because losses depend primarily on scenarios