External Data for Wholesale Loss Forecasting

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Model Taxonomy

- Model taxonomy supports the use of external data and models

- **Champion** is the basis for wholesale loss forecasts that inform capital adequacy
  - Model complexity appropriate to the materiality of the portfolio

- **Challenger** provides alternative perspective, insurance against champion model limitations, and informs overlays
  - Data and technique independent of the champion model maximize alternative perspective

- **Benchmark** support results with alternative loss forecasts
  - Simpler models lacking sophistication appropriate for the materiality of the portfolio
  - Provide a different or broader perspective
  - Generally lower approval standards

**Challenger model objectives motivate the need for alternative data, but expectations remain high**
Benefits of External Data

- Challenger decision is not internal versus external, but how well does the proposed approach offset champion model weaknesses

- Challenger objectives – alternate perspective, insurance against limitations, and methodological exploration

- Independent information – alternate data and/or methods – maximize challenge value
  - "Hedge" to internal alternatives – methodological and data limitations
  - External data often support alternative techniques – providing additional business support

- Various sources can satisfy external data needs but each have pros and cons

*External data provide strong alternative perspective, but have limitations*
Sources of External Data

- Various sources of external data exist to support Wholesale stress testing
  - **Consortium and Vended Public Data**
    - Pros: Generally long history with detailed financial data
    - Cons: Requires rigorous defense to support applicability
  - **Regulatory Reporting**
    - Pros: Long history aggregated across peer banks
    - Cons: Lacks sufficient portfolio details

- External data sources have relative advantages and limitations – ultimate selection should be informed by the champion limitations

- Mitigation of data limitations is required for a successful model

*No “correct” external data source – each has benefits and limitations*
Pre-profiling of External Data

- Established internal expectations to evaluate external data *BEFORE* the engagement
  - Outline expectations of data representativeness, comprehensiveness, and quality
    - Vendor standing in the industry and SME’s view of external data relevance
  - Determine data ownership, internal or third-party, as support for validation
    - Lack of ownership restricts development and validation capabilities – Can model validation replicate?
  - Detail all data benchmarking that can support external data
    - Proving applicability and identifying limitations through benchmarking improves the outcome

*Pre-engagement due diligence mitigates future challenges*
Analytical Evaluation of External Data

- Create analytical support to assess relevance and comprehensiveness of data
  - **Applicability** – measure external data’s relevance to the portfolio
  - **Comprehensive** – measure data’s ability to model the entire portfolio
    - Sufficient default and loss set and availability through economic cycle(s)?

- Compare key metrics – verify external data span portfolio and key metrics are similar
  - Distribution by industry, property type, geography, etc.
  - Key underwriting and risk ratios

- Filtrations maximize similarity between external data and portfolio

- Statistical comparisons (e.g., Information Value & Chi-Squared) are helpful, but SME buy-in is required.
SME Evaluation of External Data

- Engage SMEs to evaluate external data and key metrics
  - Provide business intuition and experience not easily replicated in analytical analyses

- Require SME guidance and approval for key data and development decisions

- SMEs contribute to external data review through:
  - Support for provider selection – is the vendor a recognized expert?
  - Selection key risk measure comparisons – what metrics define the portfolio?
  - Evaluation of data – SMEs review key risk measures and results

- Applicability concerns may not be fully resolved
  - calibrate for persistent limitations
  - Share assumptions and limitations with governance process

SME evaluation defines success – calibration for remaining limitations
Champion/Challenger Criterion

- Champion/Challenger decision is comprehensive to key modeling considerations
  - Data considerations – Representativeness, Comprehensiveness, and Quality
  - Management and SMEs review and compare consideration ratings between models

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<thead>
<tr>
<th>Consideration</th>
<th>Evaluation</th>
<th>Internal Data Model</th>
<th>External Data Model</th>
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<tbody>
<tr>
<td>Data Representativeness</td>
<td>Which of internal and external data is more representative of the portfolio <strong>today</strong></td>
<td>A</td>
<td>B</td>
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<tr>
<td>Data Comprehensiveness</td>
<td>Which of internal and external data captures more economic cycles</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Data Quality</td>
<td>Which of internal and external data is more consistent and reliable throughout history</td>
<td>C</td>
<td>B</td>
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- Evaluations are judgmental and no formal weights are provided
- Model considerations complete the champion/challenger selection process
Conclusions

■ External data offer independent challenge to internal approaches – multi-cycle data that support alternative approaches

■ Expectations for challenger approaches is high – support must be comprehensive

■ Comparison of key data dimensions is required and filtration is often necessary

■ Use SME review to identify comparative issues hidden from analytical review

■ Persistent differences require model calibration – calibration carries risks and limitations

■ Senior management and portfolio SMEs should review all known limitations during model evaluation

*External data are a valuable resource, but KNOW THE LIMITATIONS*