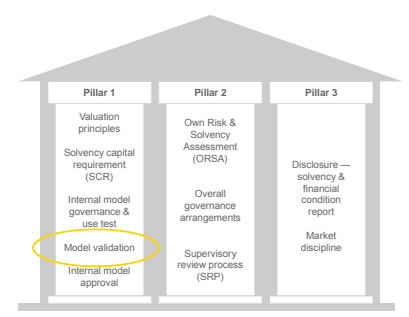


Internal model validation: a Solvency II perspective

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Overview: Solvency II regulatory framework



Pillar 1	Pillar 2	Pillar 3
Valuation principles	Own Risk & Solvency Assessment (ORSA)	Disclosure — solvency & financial condition report
Solvency capital requirement (SCR)	Overall governance arrangements	Market discipline
Internal model governance & use test	Supervisory review process (SRP)	
Model validation		
Internal model approval		

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Solvency II requirements for validation

Solvency II Directive Article 124:

Insurance and Reinsurance undertakings shall have a regular cycle of model validation to demonstrate to their supervisory authorities that the resulting capital requirements are appropriate. This includes, but is not limited to:

- ▶ Monitoring the performance of the internal model
- ▶ Reviewing the ongoing appropriateness of its specification
- ▶ Testing the forecasted distributions using various quantitative and qualitative methods

Impact:

- ▶ Validation is a critical part of demonstrating that the internal model is suitable for setting capital for regulatory purposes, i.e., to get internal model approval for regulatory capital setting purposes.
- ▶ Validation is a critical element of the Use test – i.e. risk adjusted decisions are more credible based on a validated model.
- ▶ The validation process is ultimately owned by the board.

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Elements of internal capital model validation

- ▶ Validation policy
- ▶ Data Policy
- ▶ Validation methodology/principles/tools
- ▶ Validation report
- ▶ Findings and Conclusions

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Examples of internal model validation gaps compared to the Solvency II requirement

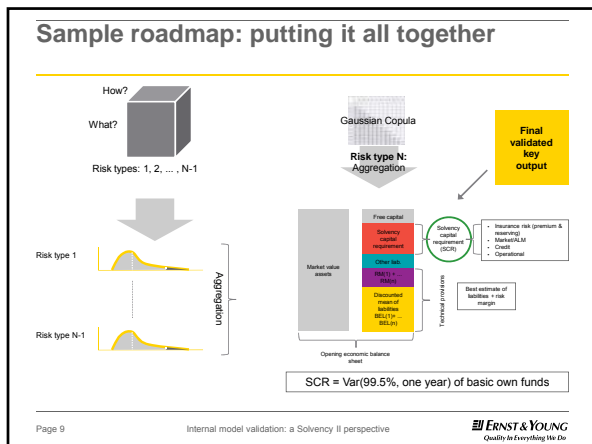
- ▶ **Validation policy:**
 - ▶ Lack of governance, no escalation procedures, roles and responsibilities unclear
 - ▶ Lack of governance between legal entities and group (i.e., Who runs the model? Who validates what?)
 - ▶ Frequency of validation unspecified
 - ▶ Lack of consistency between model methodology and validation across legal entities
 - ▶ No principles of "materiality" established to identify "material items" or "non-material items"
 - ▶ No principles of "proportionality" established
- ▶ **Validation methodology/principles/tools:**
 - ▶ No methodology or principles or tools for validating the model results
 - ▶ No methodology or principles for model calibration and parameterization
 - ▶ Level of granularity of validation is unclear
- ▶ **Independence:**
 - ▶ No independent review or appropriate governance for independent review in place
 - ▶ "Independent" review is carried out occasionally if requested by regulators or by senior management but not on a regular basis
- ▶ **Validation documentation/reports:**
 - ▶ No documentation or documentation standards for validation results

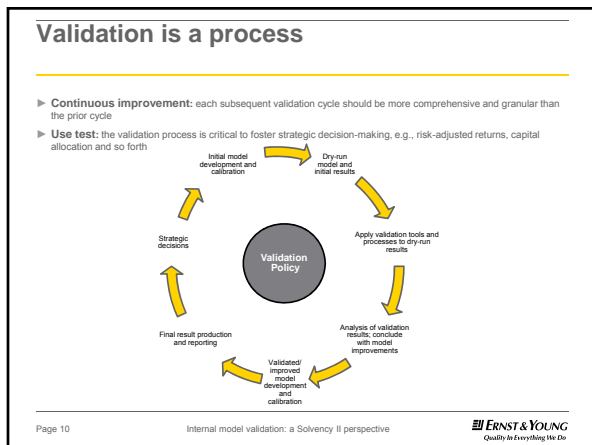
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Validation policy – sample of key items

<p>Scope of validation — What?</p> <ul style="list-style-type: none"> • What risk types to include (i.e., premium, reserving, etc.)? • What is excluded (e.g., exclude tomadolahal, data quality)? <p>Principles of materiality and proportionality</p> <ul style="list-style-type: none"> • How do you establish material items vs. non-material items (i.e., objective vs. subjective vs. combination)? • How do you establish principle of proportionality (i.e., are more material items validated at a more granular level)? <p>Granularity of validation — How deep?</p> <ul style="list-style-type: none"> • How far and how detailed should the validation be for a given risk type X item? • Leverage principles of proportionality and materiality <p>Limitations and future developments</p> <ul style="list-style-type: none"> • Outline known limitations of current validation process • Outline planned developments to improve validation <p>Frequency of validation process — How often?</p> <ul style="list-style-type: none"> • How often will the validation process be carried out (i.e., are more material items checked more frequently)? • Which validation tools should be applied at what time? <p>Thresholds</p> <ul style="list-style-type: none"> • What is the threshold for quantitative validation that would be viewed as a failed result? How to ensure consistency across all risk types? • How do you evaluate qualitative validation? 	<p>Validation Items</p> <ul style="list-style-type: none"> • Methodology • Assumptions • Parameterization • Validation of expert judgments • Data (i.e., quality vs. appropriateness) • IT systems • Use test • Governance <p>Governance of validation process</p> <ul style="list-style-type: none"> • Who owns the validation process? • Who evaluates validation results? • What is the role of the risk-type owner? • What is the escalation criteria and procedure? <p>Documentation</p> <ul style="list-style-type: none"> • Validation policy • Validation methodology • Validation process: individual roles and responsibilities <p>Reporting</p> <ul style="list-style-type: none"> • Validation report specifications • How often? <p>Independent review</p> <ul style="list-style-type: none"> • Internal independence of validation function — Are responsibilities and reporting structures consistent with independence? • Role of external independent review • Remuneration structures for external review
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- ### Conclusion
- ▶ Internal model validation is an essential part of good risk management
 - ▶ The validation process is just as useful as the validation result
 - ▶ Minimizes operational risks
 - ▶ Internal model validation enhances the use test — risk-adjusted performance decisions can be made using a more transparent and credible model.
 - ▶ Internal model validation is a critical element for internal model approval for regulatory capital-setting purposes (outside of the US).
 - ▶ Internal model validation is likely to become a key part of NAIC ORSA.
 - ▶ Internal model validation is central to rating agency evaluations of internal models.
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