

Internal Model Validation – Challenges and outcomes

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Ecaterina NISIPASU, Head of Actuarial Modelling SCOR

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Solvency II requirements for Internal Model

Directive Articles	Main items
Article 120 Use Tests	<ul style="list-style-type: none"> - Internal model is widely used and should play an important role in the governance - Risk Management system - Economic and Solvency capital requirement and allocation process
Article 121 Statistical quality standards	<ul style="list-style-type: none"> - Probability distribution forecast - Methods - Data - Coverage of all material risks - Dependencies within and across risk categories - Effect of Risk mitigation - Financial guarantees and contractual options - Future management actions - Include on commitments to policyholders
Article 122 Calibration standards	<ul style="list-style-type: none"> - Time period and risk measure - SCR based on the probability distribution forecast - Use of other benchmark / market data
Article 123 Profit & Loss attribution	<ul style="list-style-type: none"> - Review cause of profit for each major business unit - Categorisation of risks
Article 124 Validation standards	<ul style="list-style-type: none"> - Cycle of validation, performance, appropriateness, results against experience - Appropriateness of probability distribution forecast - Stability, sensitivity to key assumptions - Accuracy, appropriateness and completeness of the data
Article 125 Documentation standards	<ul style="list-style-type: none"> - Design and operational details - Compliance with text - Theory, assumption, mathematical, empirical bases - Limitations
Article 126 External models and data	<ul style="list-style-type: none"> - Use of third party shall not be a justification for exemption

- Internal model validation is one of the most important step in the model building process
- No standards defined

Supervisory expectations

- ❑ Companies need to prove that their internal model
 - Have solid statistical foundations and data used are of good quality
 - Is well understood by stakeholders and trusted within the company
 - Is used in day-to-day operations and strategic decisions
 - Has a thorough governance
- ❑ Validation provides evidence that the internal model fits its purpose, in terms of methods employed and results obtained, for adequately quantifying the capital requirement and use in company's risk management and decision making process
- ❑ Companies shall demonstrate that they have an appropriate independent validation process which includes a regular cycle of validation and necessary updates of the internal model; a thorough validation policy has to be defined and implemented
- ❑ A correct application of the validation process contributes to reducing the misalignment of the interests of the market and of the regulator.

Internal Model approval process challenges

- ❑ The internal model approval process for Solvency II is a significant challenge and a learning-curve for both companies and supervisors
- ❑ The validation process is different from the approval process
- ❑ The company has the primary role in the validation process. The supervisors will evaluate the adequacy of the validation process implemented in the company
- ❑ Validation is therefore one of the key elements for regulatory approval of an internal model under Solvency II
- ❑ The definition of appropriate criteria for validating the models taking into account proportionality is essential
- ❑ The validation process need to be detailed in the validation policy: scope, frequency, validation tools, roles and responsibilities, assessment of the independence of the validation

Internal Model validation challenges – some examples

- No market standards defined yet
- Assessment of the expertise and independence of validation teams over the years
- Use of appropriate validation tools; definition of adequate reverse stress tests
- Validation of the use of external tools
- Validation of high quantiles but keeping in mind the average
- Validation of the risk aggregation
- Definition of appropriate materiality levels
- Validation of expert judgement
- Assessment of the data quality
- Assessment of the documentation adequacy

Model Risk

- ❑ Assessing the model adequacy is one of the main elements of the validation but as well one of the most challenging
- ❑ Validation is more challenging when it requires evaluation at high quantiles of loss distributions combined with data scarcity and complex dependencies between distributions
- ❑ Some modelling techniques allow to separately estimate the model risk but usually the modelling error combines for example estimation error as well
- ❑ The validation may consider
 - ❑ Statistical adequacy tests for simpler models when sufficient data are available
 - ❑ Alternative methods or assumptions to challenge the model used

Validation reports

- ❑ There are no standards defined for reporting validation outcomes
- ❑ Validation scope and process, including roles and responsibilities of the validators and following the validation policy
- ❑ Assessment of the completeness of the review
- ❑ Level of assurance required, level of granularity of the validation
- ❑ Criteria (quantitative and qualitative) used to validate or not the data, methods, assumptions, parameters, results process etc
- ❑ Identification of the key risk drivers and assumptions taking into account proportionality
- ❑ Detailed description of the validation tools used
- ❑ Description of the alternative approaches that could have been used
- ❑ Identification of the strength and weaknesses of the model
- ❑ Findings and recommendation for future improvements of the model