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Internal Model Validation – what have we learnt and what next?

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Internal Model Validation: introduction

A useful exercise or a necessary evil?

- Validation of economic capital / ICA models has always existed...
- ...but Solvency II introduced additional levels of validation (and documentation!)

Why do we validate?

- To test our models
- To understand limitations in our models
- To improve our models
- To give the Board comfort that the results are reliable enough to run the business with
- ...because the regulator tells us to

But...

- It is an expensive and time intensive exercise
- The validation results may not be what we wanted...



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Internal Model Validation: the challenges

Managing the
project

What to
validate?

Validating
expert
judgement

Applying
materiality

Use of
validation
tools



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Lessons learnt

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Managing an IMV project: the issues

Issues	Consequences
Detailed work plan not produced early enough	2 nd line raised a large number of findings that could have been dealt with in initial methodology development
Lack of clarity of the end-to-end IMV process	Lack of key stakeholder engagement and lack of governance of the review process
No time allowed in the plans for 2 nd line to review iterations of documents	2 nd line did not have sufficient resources at the right time
No time allowed in the plans to remediate 2 nd line findings and feedback from the PRA	1 st and 2 nd line did not have sufficient resources at the right time to perform remediation.



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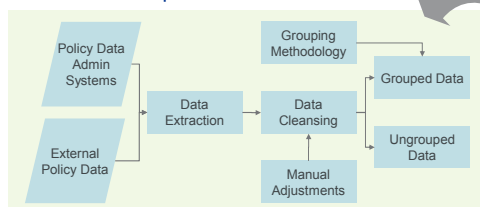
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Managing an IMV project: the lesson (1)

Develop a detailed 'Validation Work Plan'

- Need a direct link between validation activities and Solvency II requirements (or what you are trying to achieve through validation) including roles and responsibilities

Example: Model Point Production

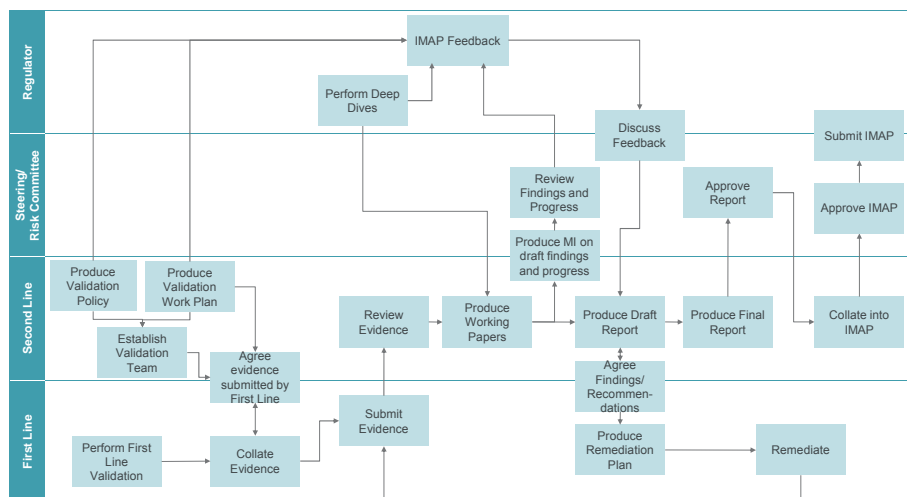


Standards	Ref. L2 Text	Validation	Frequency	[...]
The grouped model points gives approximately the same results for the best estimate and 99.5 th stressed scenario calculation on a per policy basis	TP16 (3)	Compare the following results produced using the grouped and ungrouped model points on the best estimate and the stressed 99.5 th scenario: ■ Number of policies ■ Cost of gtees ■ Claims cashflow ■ Expenses ■ [...]	At least before each year end valuation.	[...]

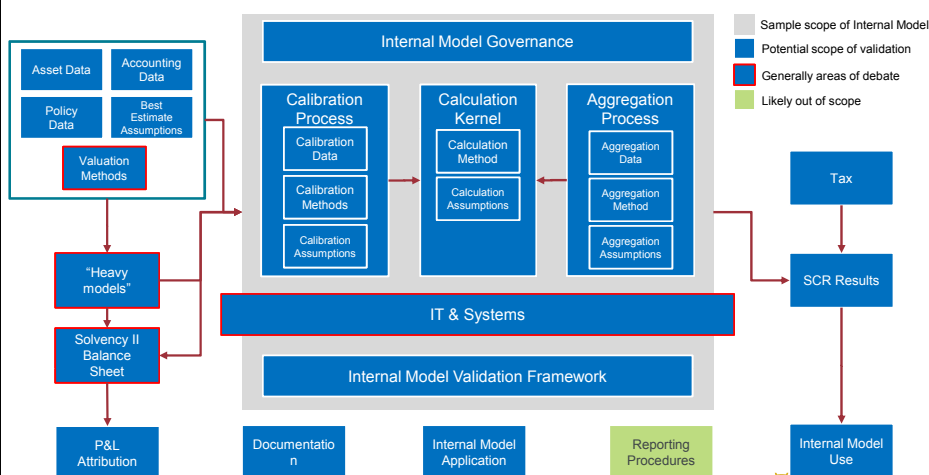


Managing an IMV project: the lesson (2)

Understand and map out the end to end process



What to validate: the issues



What to validate: the lesson

The scope must be set out up front and provide benefit to the business and purpose

- The scope of the internal model and the scope of validation can (should?) be different
- Concentrate effort on known and/or material risks...
- ...but ensure completeness
- Align the scope with the purpose of validation



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Validating expert judgement: the issues

Issues	Consequences
Lack of clarity of what is covered by expert judgement.	A narrow view means that expert judgements are not sufficiently validated and documented.
Lack of a process to 'expose' key expert judgements.	Unable to demonstrate that you understand where expert judgements are made and that they are validated.
Lack of articulated standards for validating expert judgement.	Inconsistent depth of validation applied to different expert judgements.
Lack of understanding of the sensitivities and materiality of the expert judgements made.	Leads to much greater (and often disproportionate) review and remediation work required after review from the 2 nd line.



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Validating expert judgement: the lesson

Use an expert judgement policy to articulate standard and controls to validation

- Typical areas where expert judgement will be used include:
 - Setting of best estimate parameters and assumptions
 - Choice and cleansing of data sources
 - Choice of method and insurance risk distributions
 - The level of validation that will be performed

Framework: 'What are the enablers I need to allow me to monitor and validate judgement effectively?'

- Expert Judgement Policy or Guidance document
- Link to Validation Work Plan

Visibility: 'How do I know when expert judgement has been made?'

- Document templates with separate sections in internal model documents to list expert judgments made
- Attestations required from the business

Validation: 'How do I get comfort on the judgements made?'

- Assess impact if judgements are wrong
- Assess impact of using alternative judgements (e.g. sensitivities)
- Include quantitative as well as qualitative justifications
- Set tolerance limits before judgement needs to be reviewed



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Applying materiality: the issues

Issues	Consequences
Lack of clarity on how materiality should apply in practice.	Difficult to apply an objective risk based approach, getting stuck in "academic" discussions
Not enough focus on qualitative thresholds	Difficult to capture the inherent uncertainties and complexities in the interaction of various model components
Consideration of consistency between solo level materiality and group level materiality	Inconsistencies arise when applying materiality across different solo entities within a group and inconsistencies between solo entity and group.



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Applying materiality: the lesson

Qualitative assessment is just as important as quantitative

- Concept of materiality can only be considered usefully in the context of a purpose and result.
- Starting point: identify material risk modules and apply this to all components used to quantify that risk
- Considering the materiality of each process in isolation could lead to academic discussions about whether for example an item of data is material or not.
- Qualitative assessments are just as important as quantitative assessments of materiality.

Materiality by 'Risk Modules' versus 'Process'

	Agg SCR	Equity Risk	Lapse Risk	Risk Module x
Results				
Method				
Assumptions				
Expert Judgement				
Data				
Systems & Processes				

Examples of Quantitative Assessments:

- Is the risk module $\geq 5\%$ of undiversified SCR?

Examples of Qualitative Assessments:

- Will deficiencies in the component result in the Board and regulators concluding that overall, the internal model is not fit for purpose?
- Is the component new and were there substantial changes made in the last 12 months?
- Does the operation of the component rely heavily on expert judgement?
- How complex is the component?
- Has there been a history of consistent errors?
- What are the current industry concerns?

Use of validation tools: the issues

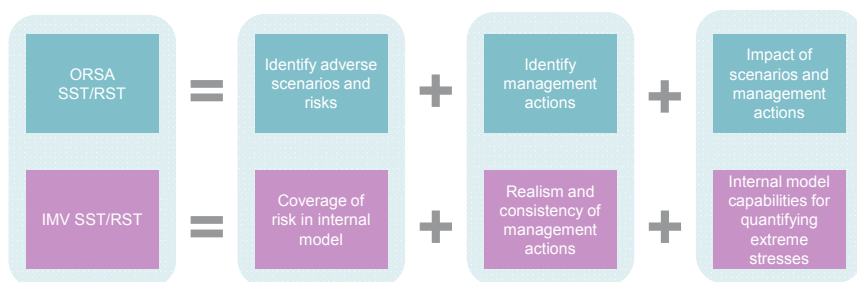
- Validation tools include:
 - Sensitivity testing of the material assumptions
 - Stress and scenario testing, including reverse stress testing
 - Analysis of the stability of the outputs of the internal model
 - Analysis of P&L Attribution

Issues	Consequences
Generic mention of tools being used within the Validation Work Plan without full consideration of how they can best be used in practice.	Misunderstanding of the use of the tool and the relevance to the validation process leading to tools being used incorrectly.
Relying on existing tools and frameworks that may not be sufficient (e.g. SOX. Audit etc).	Significant work at late stages in the IMV project to identify gaps and perform additional validation.
2nd line review only focussed on checking that the evidence exist.	The 2 nd line should provide independent challenge to the internal model, including technical challenge to the methods.

Use of validation tools: the lesson

SST & RST performed for IMV will have a different objective to that performed for ORSA

- Stress and Scenario Testing (SST) and Reverse Stress Testing (RST) is a valuable tool and needs to be used appropriately
- Integrating the internal model into the regular SST/RST cycle in order to validate the internal model is crucial

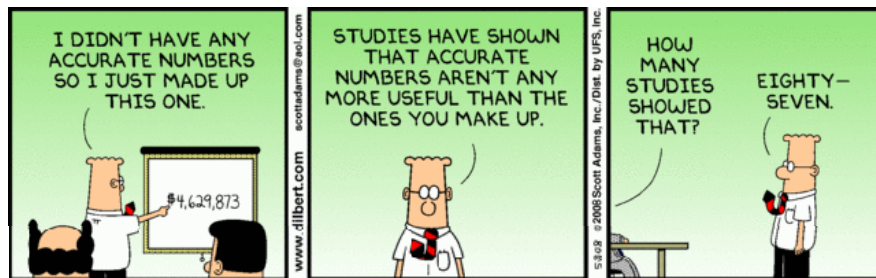


Validation – A balancing act

Current and future use at Old Mutual



Expertise
Mentorship
Thought leadership
Progress
Community
Sessional Meetings
Education
Working parties
Volunteering
Research
Shaping the future
Networking
Professional support
Enterprise and risk
Learned society
Opportunity
International profile
Journals
Support



Validation activity

Validation activity varies depending on:

- Nature of business
- Type of model
- Data available
- Uses of model

Level of activity should be:

- Appropriate
- Practical

....for your business



An Old Mutual perspective

- Business spread across three main regions:
 - South Africa, Africa and other emerging markets
 - UK and Europe
 - US and Bermuda (in run-off)
- Covering:
 - Life insurance
 - General insurance
 - Asset management
 - Banking



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**Statistics are like bikinis.
What they reveal is
suggestive, but what they
conceal is vital.**

‘Aaron Levenstein’



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It is more than just an actuarial exercise

Technical versus non-technical

Ensuring that the statistics is sound is very important, but...

... It is as important to ensure that the methodology and results adequately reflect the specifics of the risks in your business

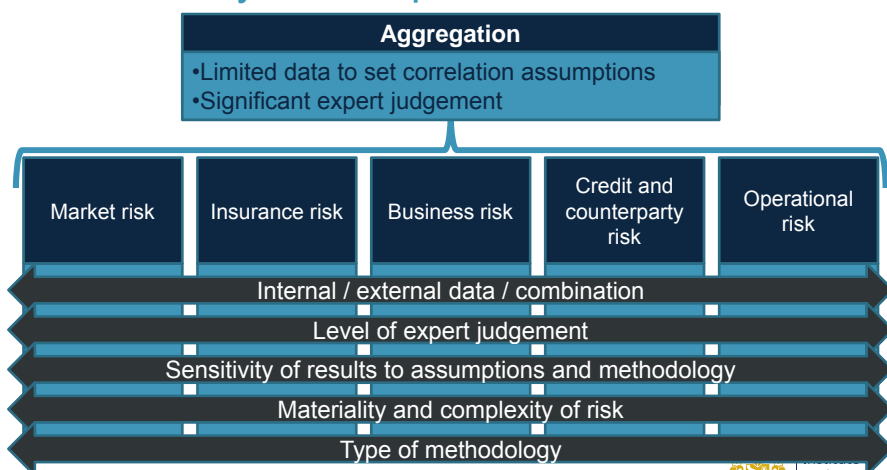


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A component approach

Where are your complex and material risks



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Questions

Comments

Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.

