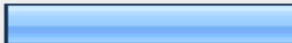







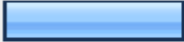

# IRM – Special Interest Group Solvency II

Operational Risk Modelling

1. Have you looked at operational risk modelling as part of Solvency II?			
		Response Percent	Response Count
Not yet		34.0%	18
<b>Started work</b>		<b>54.7%</b>	<b>29</b>
Extensively		9.4%	5
Finished		1.9%	1
		<i>answered question</i>	<b>53</b>
		<i>skipped question</i>	<b>0</b>

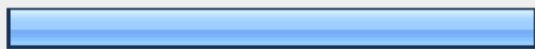
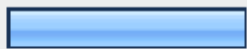


- Over half have started work in some form
- One third have yet to start
- A few are done or nearly done

2. Has Solvency II changed the way you approach operational risk compared to ICAS?

		Response Percent	Response Count
No		24.5%	13
<b>Somewhat</b>		<b>52.8%</b>	<b>28</b>
Significantly		20.8%	11
Completely		1.9%	1
		<i>answered question</i>	<b>53</b>
		<i>skipped question</i>	<b>0</b>


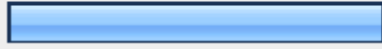
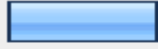


- Quarter have kept same approach
- Half have made minor changes
- Fifth have had major change

### 3. Who in your organisation is responsible for operational risk modelling?

		Response Percent	Response Count
Risk Management team		61.7%	29
Actuarial team		27.7%	13
Specialist Operations Risk team		8.5%	4
External consultants		2.1%	1
Other (please specify)			13
		<b><i>answered question</i></b>	<b>47</b>
		<b><i>skipped question</i></b>	<b>6</b>



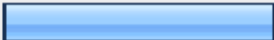
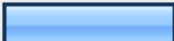

- Most use Risk Management Team
- Just over a quarter use Actuarial Team
- Small number use specialist team
- One using external consultants

#### 4. How many operational risks have you identified?

		Response Percent	Response Count
<20		30.2%	16
<b>20-49</b>		<b>43.4%</b>	<b>23</b>
50-99		17.0%	9
100-149		3.8%	2
150+		5.7%	3
		<i>answered question</i>	<b>53</b>
		<i>skipped question</i>	<b>0</b>

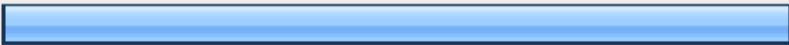

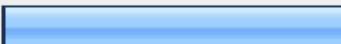
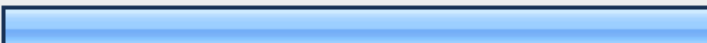
- Three quarters identified less than 50
- Few above 100

5. What is the approximate percentage of operational risks to the total number of risks?

		Response Percent	Response Count
<10%		9.8%	5
10-24%		31.4%	16
25-39%		31.4%	16
40-59%		19.6%	10
60%+		7.8%	4
		<i>answered question</i>	<b>51</b>
		<i>skipped question</i>	<b>2</b>





- For majority, operational risks are less than half total risks
- Few exceptions

6. Where do you get data on operational risks? (Please tick all that apply)

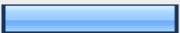


		Response Percent	Response Count
Risk assessments		92.5%	49
Scenario development		77.4%	41
External loss data		39.6%	21
Internal events		83.0%	44
Other (please specify)			3
		<b><i>answered question</i></b>	<b>53</b>
		<b><i>skipped question</i></b>	<b>0</b>

- Wide variety in use
- Relatively few using external data

7. Are you a member of any external databases or do you access external data sources? If so which? (Please tick all that apply)




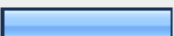


		Response Percent	Response Count
ORIC		72.7%	8
OpBase		9.1%	1
ORX		18.2%	2
SAS		9.1%	1
Other (please specify)			9
		<b>answered question</b>	<b>11</b>
		<b>skipped question</b>	<b>42</b>

- Most (80%) skipped question, are not members
- Three quarters of the 20% who use an external database are member of ORIC

8. What is your approach to modelling of operational risk? (Please tick all that apply)			
		Response Percent	Response Count
Causal / scenario model		76.0%	38
Risk Indicators		42.0%	21
Scorecard		20.0%	10
Predictive (based on observations)		28.0%	14
Empirical Loss Distribution (own data)		34.0%	17
Explicit loss distribution parameterised with historical data (external data)		16.0%	8
Extreme value theory		4.0%	2
We don't have an approach		0.0%	0
		Other (please specify)	7
		<b>answered question</b>	<b>50</b>
		<b>skipped question</b>	<b>3</b>

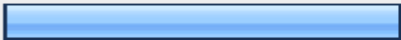
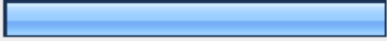

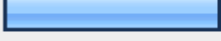
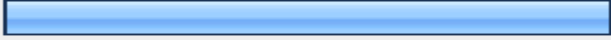

- Wide variety, but causal / scenario most popular
- Many use more than one approach

9. What platform / technology are you using or planning to use for operational risk modelling?

		Response Percent	Response Count
Excel		29.4%	15
Excel with Add-ons (@Risk, Precision Tree, etc)		19.6%	10
Internal / custom developed software		9.8%	5
Commercial / Off-the-shelf software		19.6%	10
Commercial / bespoke developed software		11.8%	6
Undecided		9.8%	5
Other (please specify)			5
		<b>answered question</b>	<b>51</b>
		<b>skipped question</b>	<b>2</b>

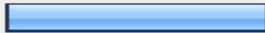
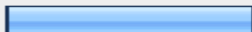


- Half using Excel as base platform
- Others split across platforms
- Some undecided

10. What do you perceive as your biggest challenges? (Please tick all that apply)

		Response Percent	Response Count
Aggregation		46.2%	24
Correlation		44.2%	23
Causation		15.4%	8
Emerging risks		25.0%	13
<b>Data quality</b>		<b>71.2%</b>	<b>37</b>
Resources and management commitment		30.8%	16
		Other (please specify)	3
		<b><i>answered question</i></b>	<b>52</b>
		<b><i>skipped question</i></b>	<b>1</b>

- Nearly three quarters select data quality
- Others prominent, but spread

11. One of the challenges in managing operational risks is in identifying "boundary issues". These might occur when, for example, an insurance claim is made larger because of a failure in the underwriting process (such as failure to attach reinsurance). What attempt do you make to identify boundary issues when quantifying operational risk? Do you:

		Response Percent	Response Count
Only run operational risk quantification for non-boundary issues (e.g. assume operational risk losses around insurance processes come through in insurance claims or other data)		30.2%	16
Attempt to strip out only major boundary issues from the original data for separate quantification (e.g. take out major underwriting process failure costs from the insurance data)		28.3%	15
Detailed analysis of boundary issues		22.6%	12
Don't know		18.9%	10
	<b>answered question</b>		<b>53</b>
	<b>skipped question</b>		<b>0</b>

- Nearly three way split between approaches
- Margin still need to decide

# Key Findings

- Generally work has started...
  - Assigned responsibility (Risk Management Team)
  - Defined an approach (Causal / Scenario + others)
  - Collecting information from a variety of sources
  - Using Excel as a base platform for modelling
- Room for improvement
  - Data quality needs to be addressed
  - External data remains difficult to use
  - Need to ask if Excel (plus add-ons) is sufficient
  - Lack of actuarial involvement
  - Optimal number of operational risks versus total risks
  - Optimal approach for boundary issues