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Reserve Uncertainty Framework: Linking Reserving and Reserve Risk

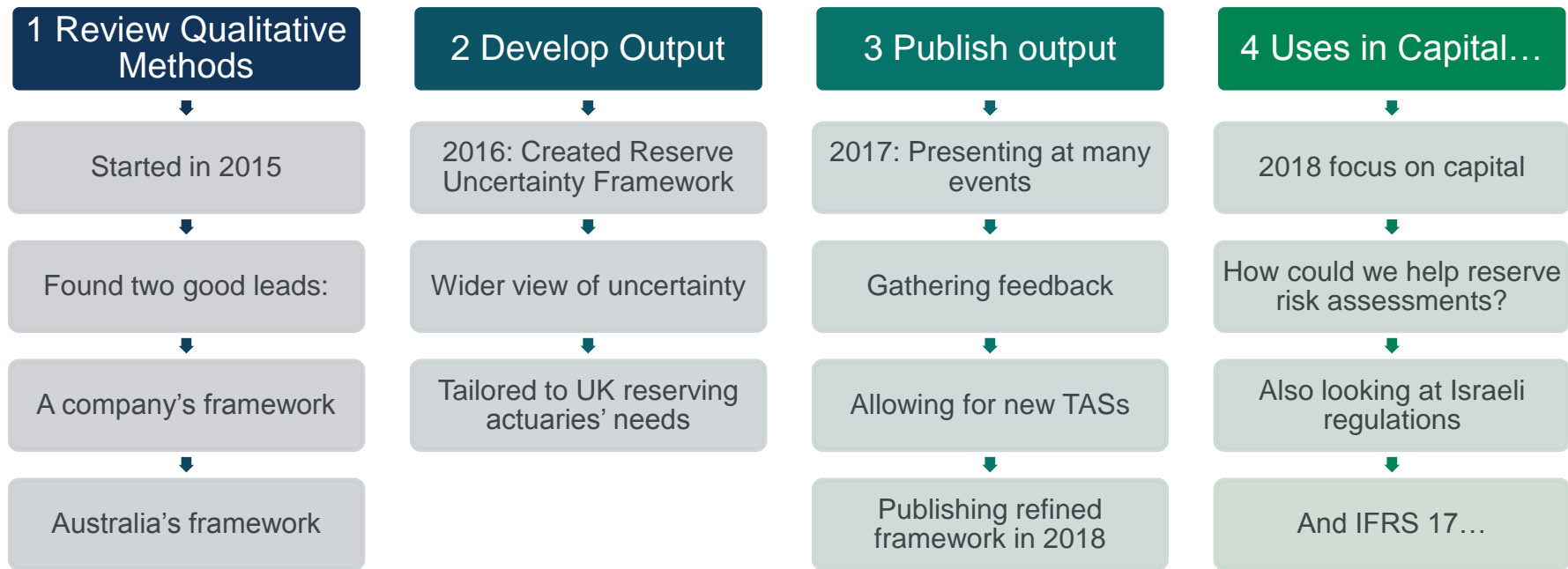
IFoA MUQ Working Party, presented by

- Keith Brown (Chair)
- Jeff Courchene
- James Keough

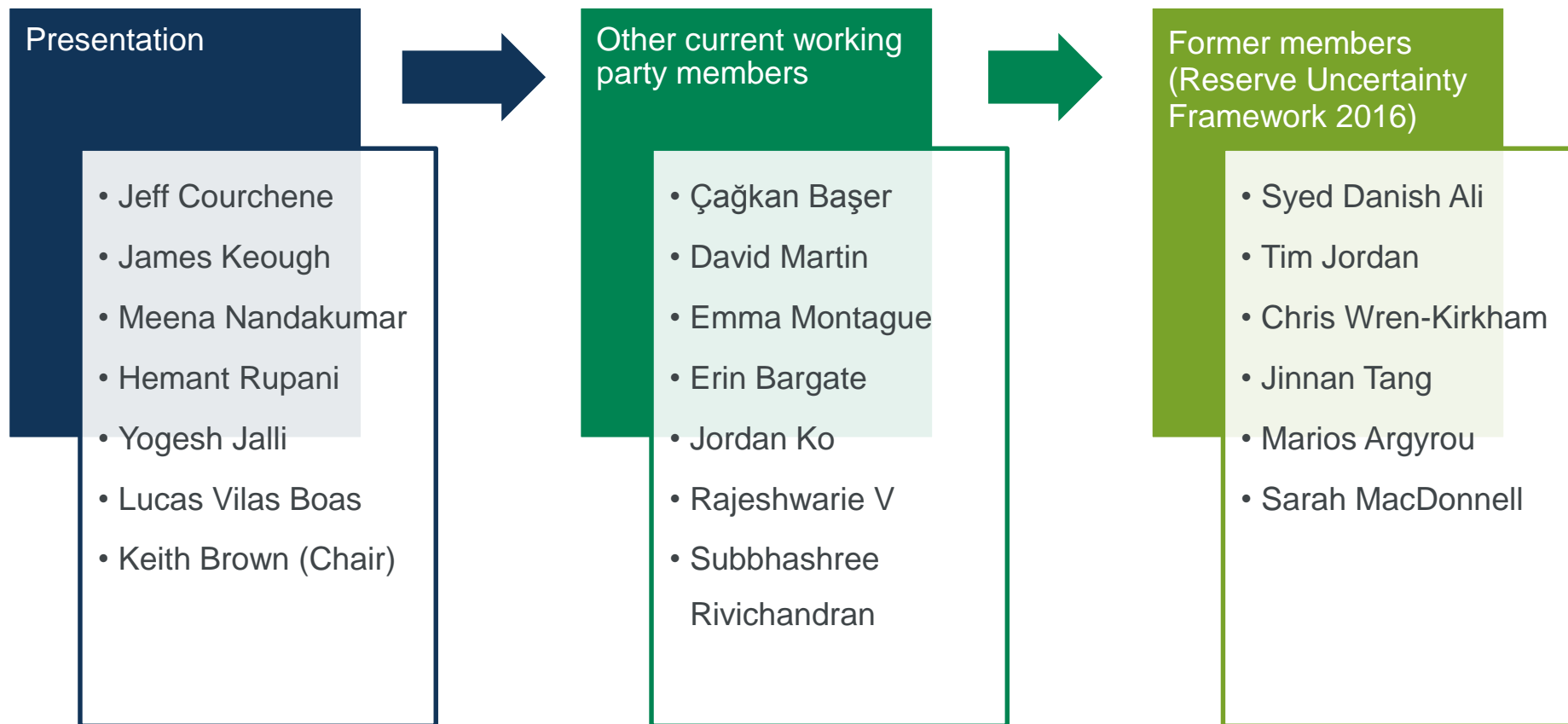
Special thanks to Meena Nandakumar, and MUQ is a GIROC working party

MUQ Working Party outputs to date

We are now looking to see what value we can add to reserve-risk assessments after developing a [Reserve Uncertainty Framework](#) aimed at reserving rather than capital actuaries. We haven't arrived here overnight...



Thank you

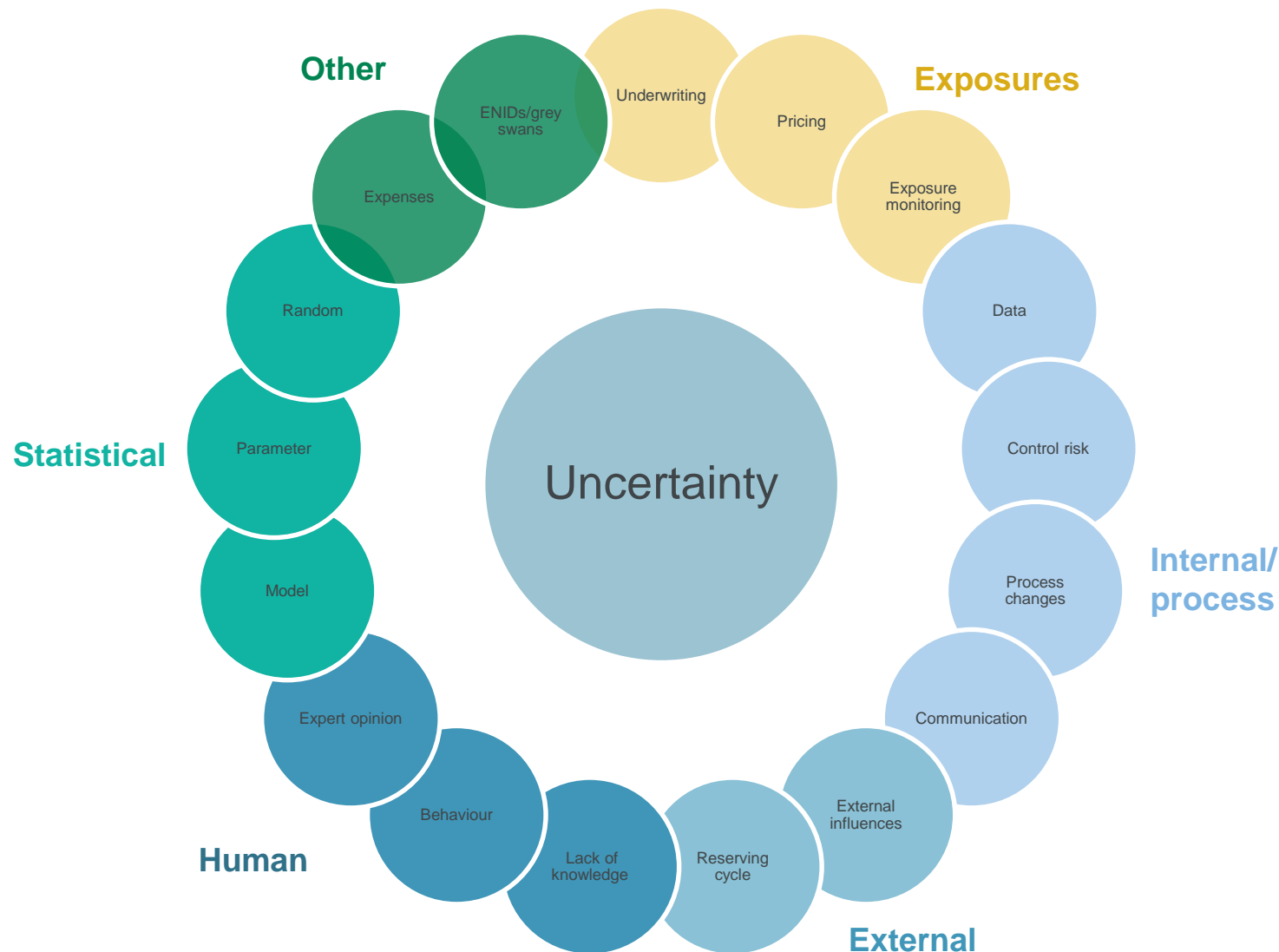


Contact us: speak to the Chair or email professional.communities@actuaries.org.uk

The Reserve Uncertainty Framework



Reserve Uncertainty Framework categories



Extending the framework to reserve-risk assessment

We are looking to extend the use of the framework from the reserving process to the reserve risk estimation process. (We present ideas in the slides that follow, intending to give inspiration. These ideas and methods **need to be checked to see if they are appropriate for the purpose they are being used** and may not be the optimal solution even when they are appropriate.)

Get ready to suspend (some) disbelief

For the purpose of the presentation, we envisage in the slides that follow, that reserve risk is estimated using one of a number of bootstrapping techniques, from paid or incurred loss triangles.

We also imagine that you are looking to allow for known risk that may not be evident in the data (although here we mean foreseeable risk, and not one-off events). And furthermore, we suggest this is a professional thing to do.

Where we speak of coefficients of variation (CoV) we assume for simplicity of discussion that the bootstrapping results have been back fitted to a distribution (for example, a lognormal distribution), available by origin period, and in total.

We assume each model gives a similar level of risk, unless otherwise stated.



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Exposure influences

Underwriting, pricing, exposure monitoring

Example 1 – Moving into new territory

Two years ago underwriters started to write a product in a new area: the Democratic Republic of Another Territory (DRAT). You are determining the reserve risk parameters and have been asked to ensure you have allowed for this.

Possible adaptation – change to the Coefficient of Variation (CoV)

- There are industry figures for DRAT for the specific product. Could we use the existing internal CoV for the product line combined with the industry benchmark? We could weight them using the reserves outstanding in each territory; by origin period?

What would you do?

- How have you allowed for changes in exposure when quantifying reserve risk in your work?
- Do you have experience of other things, such as changes in the external claims environment (via legislation or rules), new class actions, process uncertainty, claims backlogs or sparse data?



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Internal and process influences

Data, control risk, process changes,
communication

Example 2 – The claims manager changes

The claims manager of your line of business left a year or so ago, and the new guy isn't doing things in the same way. From previous reserve reviews, you believe his team effectively use a new claims handling philosophy and you are less confident with your estimated reserves. What to do in a reserve risk assessment?

Possible adaptation – use of paid versus incurred data for parameterisation

- The paid data could be fed into the different ways of modelling the reserve risk
- How do they compare with the incurred figures? Are they more logical? What else could you consider? Are either appropriate, or do both paid and incurred need an allowance for greater uncertainty?

What would you do?

- How have you allowed for personnel changes in quantifying reserve risk?
- Have you experience of other things such as sudden changes in case reserving, dealing with factor estimates or uncannily good claims reserving over short histories?



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External influences

External influence, reserving cycle

Example 3 – Not-at-fault motor damage cost differences

You are performing a reserve-risk assessment on motor own damage. The line's reserving actuary informed you that the reserves depend on the level of recoveries. This changes over time. Repair labour rates have been charged for at a higher level for not-at-fault cases compared to its rates to repair a vehicle regardless of the liability position. The difference comes back as a recovery. This has changed over time due to the line tactically changing the differential, which is agreed with the repair networks.

Possible adaptation – use of data net and gross of the different rates

- Could the data be modelled gross of the changes (by fixing the differential) and then allowing for greater uncertainty should the process come under pressure?

What would you do?

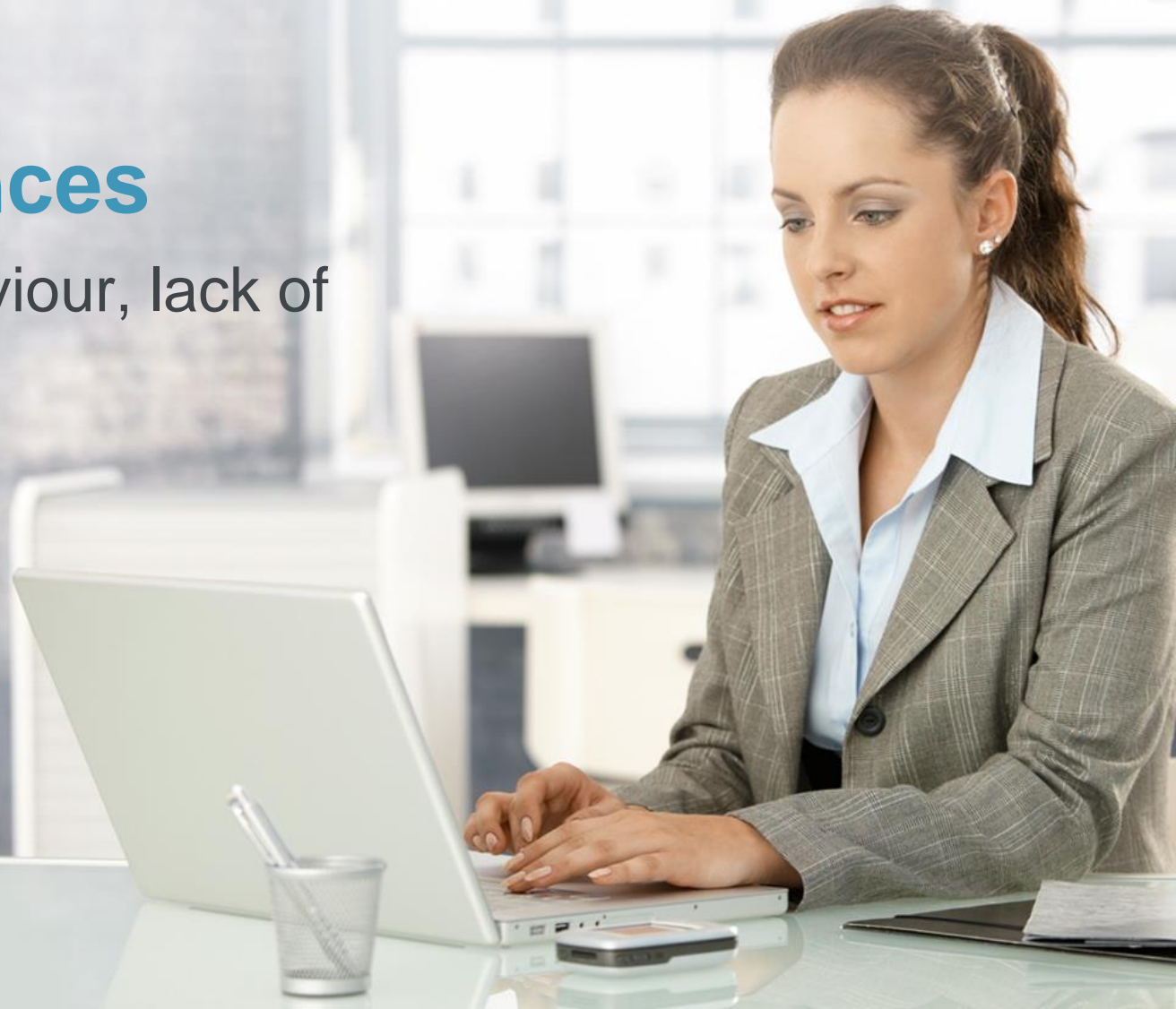
- How have you allowed for labour rate differentials that vary over time before in calibrating reserve risk?
- Have you experience of other things such as changes to reinsurance programmes, or changes in costs from supply contracts? What did you do?



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Human influences

Expert opinion, behaviour, lack of knowledge



Example 4 – Writing a new type of insurance

Your insurance company wrote a new type of insurance not yet seen before in the market. A senior manager has told the reserving team and capital modelling team to lock themselves in a meeting room and not come out until they done their reserve-risk assessment. Apart from try to run, or at least make some hot drinks, what do you do?

Possible adaptation - scenarios

- You could work together to consider how the line has been reserved, and ask the reserving actuary to go through the claims processes and key areas of uncertainty; they might even want to use the Reserve Uncertainty Framework
- Then after listening to each others' ideas, once you've agreed the biggest risks you could work out some extreme scenarios. If you need a distribution you could fit one to the extreme scenario

What would you do?

- How would you cope with this situation? Have you done something similar already?
- Would finding an industry benchmark to a proxy be of use?



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IFRS 17

Another thing to consider

IFRS 17 considerations

The International Accounting Standards Board (IASB) have said the Risk Adjustment should: *“reflect the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk”*.

Methodology

- Unlike Solvency II, the IASB have not provided a prescribed methodology for the calculation of the Risk Adjustment
- Possible methods that can be used include Value at Risk, Tail Value at Risk or Cost of Capital

Disclosure and Communication

- Under IFRS 17, entities will be required to disclose the risk adjustment and the corresponding confidence interval it represents
- With the open interpretation for the calculation of the risk adjustment. How will you be able to explain differences in confidence intervals and levels of risk adjustment between competitors?

Summary

- The MUQ Working Party have developed a framework for reserve uncertainty: the [Reserve Uncertainty Framework](#)
- We suggest pragmatic choices and common sense are used in addition to statistical sophistication
 - **it's more important to know what you don't know and communicate this professionally**
- IFRS 17, with its investor focus, could be either a challenge for reserve uncertainty or an opportunity to develop thinking and practices beyond the percentile

Looking to the future

- We will be taking today's discussion to input into our work stream to make a difference to reserve-risk assessments
- Please feel free to get in contact with us to give your feedback on uses of the framework in reserve risk, IFRS 17 or in the reserving process

Questions

Comments

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