IFRS 17: Are Reserving Processes and Systems Heading for the Rocks?

Presented by members of the TORP Working Party
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IFRS 17: Are Reserving Processes & Systems Heading for the Rocks?

- IFRS Impact Survey to gauge readiness

- Role of Actuaries within IFRS 17

- Key system build implications of IFRS 17

- Can embedding of machine learning act as a key to IFRS 17?

- Conclusions: Actuarial role in IFRS thought leadership vs system maintenance
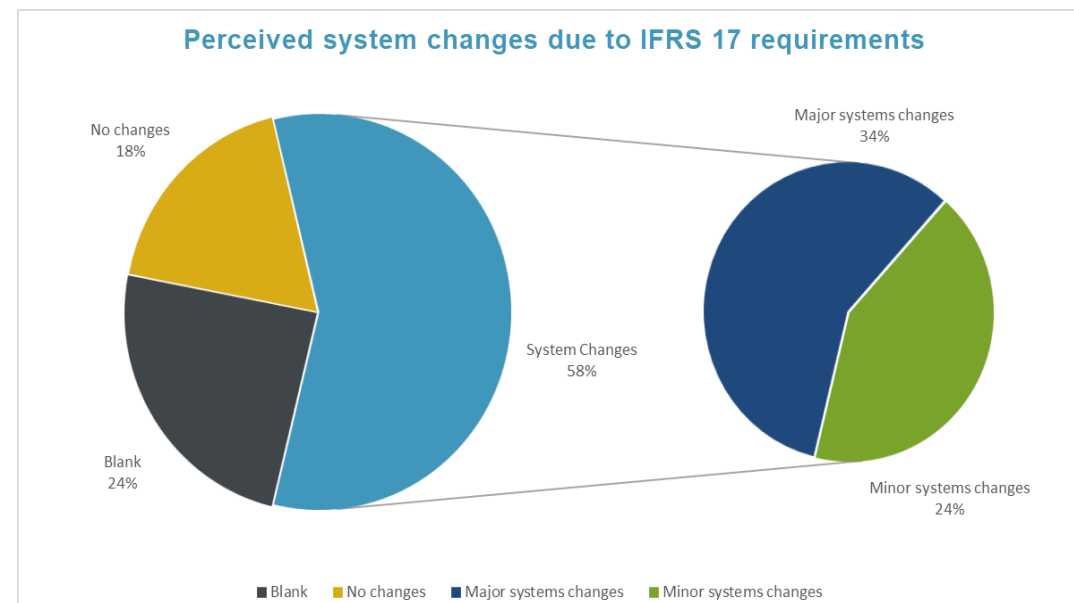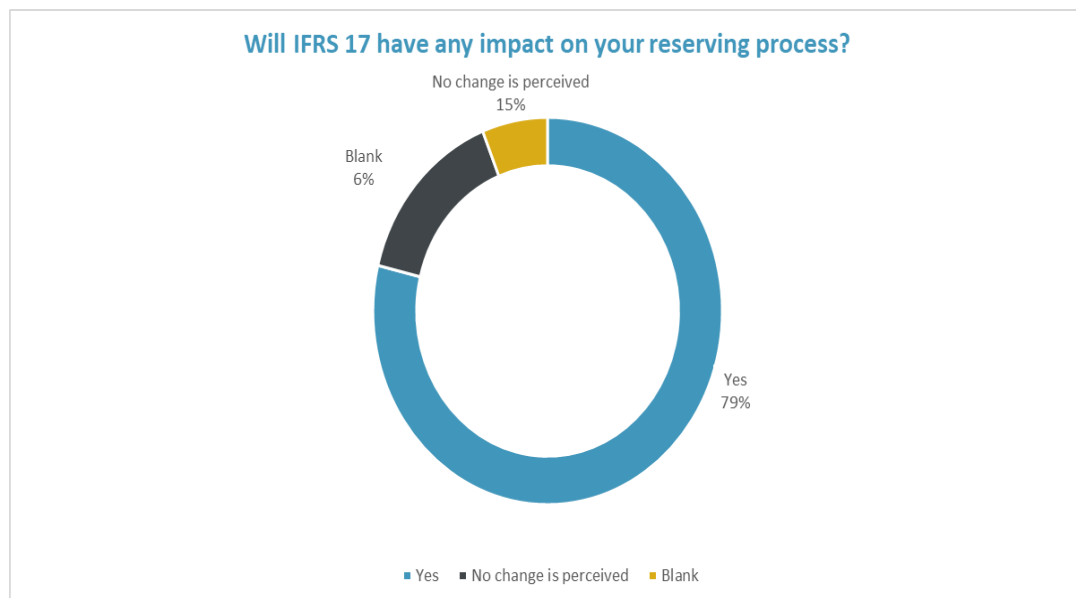
IFRS 17 Impact Survey – August / Sept 2018

IFRS 17 Impact Survey

- Update on IFRS 17 Survey Results Addresses the following key question:

  "The IFRS 17 implementation date is looming. How prepared is the General Insurance industry?"

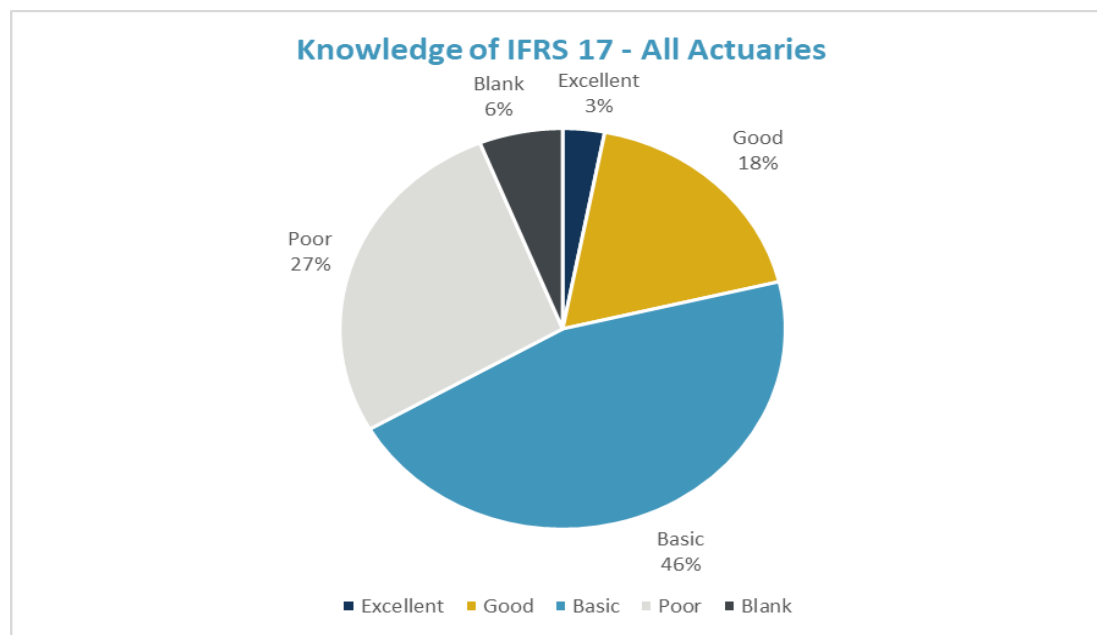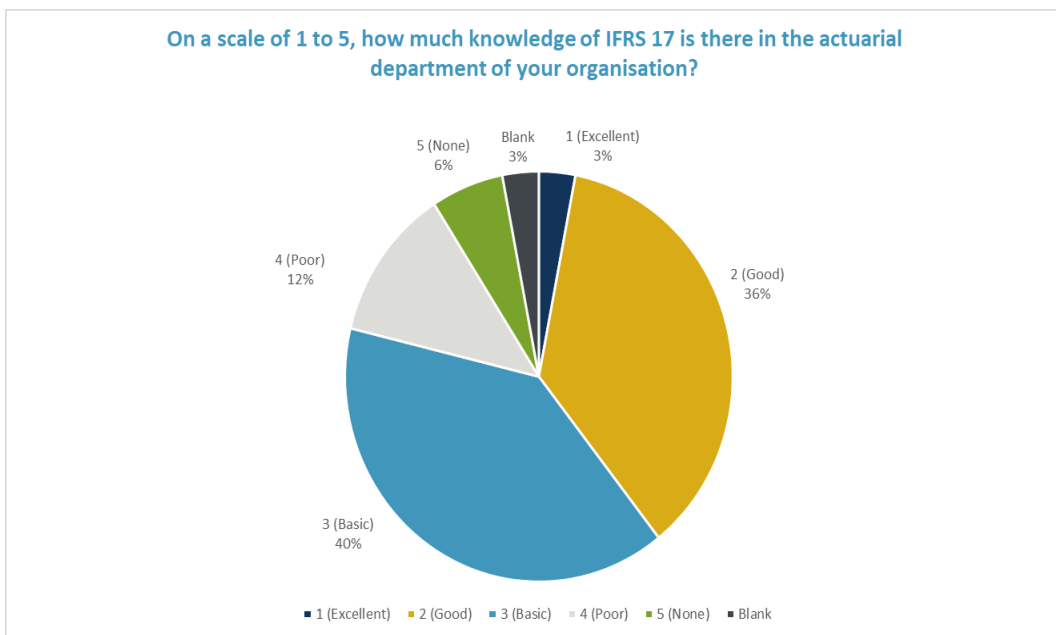- Survey date ran from mid August to early September 2018

IFRS 17 Impact Survey – Summary of Challenges Ahead (1)

- **Change Management**: 85% of the respondents believe IFRS 17 will affect their organization.
  - 79% believe IFRS 17 will impact their reserving process.
  - 64% believe that the reserving methodological approach will be impacted by IFRS 17.
  - 58% anticipate a change in their finance and/or actuarial systems due to IFRS17,
  - of which 34% anticipate major changes, and 24% anticipate minor changes.

Will IFRS 17 have any impact on your reserving process?

No change is perceived 15%
Blank 6%
Yes 79%

Yes ■ No change is perceived ■ Blank

Perceived system changes due to IFRS 17 requirements

No changes 18%
System Changes 58%
Blank 24%
Major systems changes 34%
Minor systems changes 24%

■ Blank ■ No changes ■ Major systems changes ■ Minor systems changes

IFRS 17 Impact Survey – Summary of Challenges Ahead (2)

- **Knowledge of IFRS 17**: the knowledge of IFRS17 seems to be better at the higher levels, but reduces as one goes down the actuarial function, from Head of Department to Senior Actuaries to All Actuaries.

  - This is evidenced by the increasing share of the response "Poor" as seen in the 4 charts,

  - with 27% responding "Poor" for "All Actuaries" and 43% responding "Poor" for "Other members of Staff"

On a scale of 1 to 5, how much knowledge of IFRS 17 is there in the actuarial department of your organisation?

5 (None) 6% · Blank 3% · 1 (Excellent) 3% · 2 (Good) 36% · 3 (Basic) 40% · 4 (Poor) 12%

Legend: 1 (Excellent) · 2 (Good) · 3 (Basic) · 4 (Poor) · 5 (None) · Blank

Knowledge of IFRS 17 - All Actuaries

Blank 6% · Excellent 3% · Good 18% · Poor 27% · Basic 46%

Legend: Excellent · Good · Basic · Poor · Blank

IFRS 17 Impact Survey – Summary of Challenges Ahead (3)

- **Will IFRS 17 have any impact on your reserving process, or reserving methodological approach? How?**

  – Expecting some material impact but NOT sure exactly how

  – awaiting confirmation of some of the details and their interpretation

  – report on IFRS 17 basis for group

  – Significant impact on data flow and grouping

  – Granularity added; New data segmentation may be needed

  – New non triangular approaches might be needed

  – Leverage the work on SII TPs in moving to IFRS17, e.g. architecture built, risk margin, cash flow approach

- **The benefits and/or challenges to your organization when implementing IFRS 17**

  Benefits:

  - Greater control over dataflow
  - Increasing actuaries' value to organizations
  - Increased synergy between actuaries and finance
  - Improve understanding of the accounting of insurance contracts
  - Or, just.. Unclear?

  Challenges:

  - Level of appreciation and buy-in from management team
  - Sufficient and appropriate level of skills and knowledge
  - Burden of changing systems
  - Expensive resources
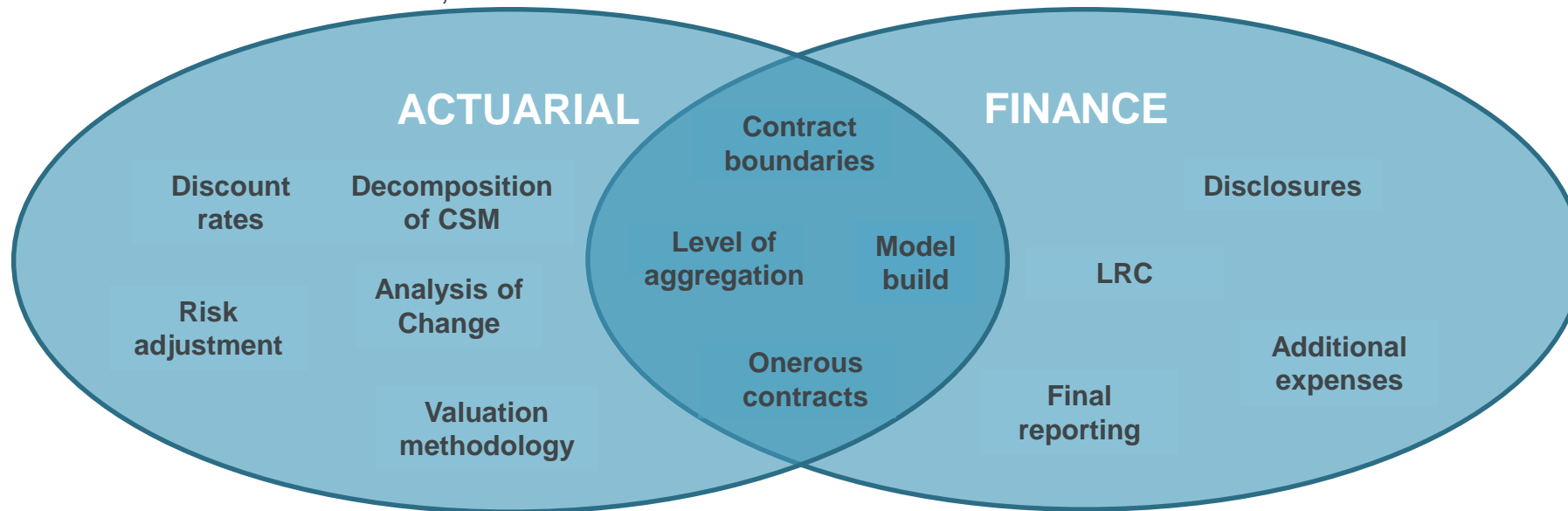 - More complex calculations
  - No clear roadmap

Role of Actuaries within IFRS 17

Responsibility for IFRS 17 work to be carried out

- Some IFRS 17 topics areas sit most naturally with actuarial, others sit neatly with finance, many are ambiguous and role allocation is up for discussion in individual firms

- There should be a clear gap analysis and consideration that this is an accounting standard
    - Actuaries do not need to do everything but may need to be aware of most of the issues
    - However, much of IFRS 17 is related to reserving (and we are good at thinking through the issues)
    - Actuaries will need to be involved, but to what extent?

ACTUARIAL

FINANCE

Contract boundaries

Discount rates

Decomposition of CSM

Disclosures

Level of aggregation

Model build

Risk adjustment

Analysis of Change

LRC

Onerous contracts

Additional expenses

Final reporting

Valuation methodology

Responsibility for IFRS 17 work to be carried out

Benefits of Finance carrying out the work:

- CFOs sponsoring IFRS 17 project in many organisations

- Understand intricacies of accounting requirements

- Possibly more cost effective?

- Ultimately responsible for submitting the financial statements

Benefits of Actuarial carrying out the work:

- Understand intricacies of and technical backdrop to reserving

- Closer to underlying trends in data

- Been through the planning and 'pain' of all Solvency 2 (SII) phases

- Ultimately responsible for submitting the reserves and for the Actuarial Function Report

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Finance and actuarial functions will need to work together (more and collaboratively):

- New roles created to link the two (e.g. specific Finance Actuary roles)?

- Responsibilities might be different during model design/build than they are once up and running (in embedding phase)

Role of Actuaries under IFRS 17

- The level of involvement from Actuarial Functions in designing the process will depend on the relative technical and process managerial strengths of your actuarial and finance teams.

- Actuaries should be involved in the design of the process no matter how strong your finance team as there will be new data requirements from the actuarial team and a new model will need to be built (with actuarial components).

- Clear thinking and early decision making on ownership of each input into the model will make for faster progress.

- Make sure you build time in the process to start explaining what all the changes mean to stakeholders.

- IFRS17 means that actuarial teams will have to work more closely with finance teams on preparing accounts.

- Actuaries will get dragged in because they are bright and hardworking, they help solve problems and change things for the better.

- There is a danger we lose more time to non-value add tasks. Consider where you add most value.

- Also a business risk if management 'distracted' by IFRS 17.

- Seek a clear scope and project charter to work with Finance teams to identify where the Actuarial teams should get involved and seek to draw clear lines of responsibility - unless you have the resources and the desire to get involved in everything

Key system build implications of IFRS 17

Overall system change Considerations

- People in the market are looking to minimise duplication

- What can we learn from previous regulatory change? (SII / IFRS9)

- Cost efficiency could be obtained through a Gap analysis rather than building a new system from fundamental "first principles"?

- Hence need to consider the merits of IFRS 17 Internal development programmes v buying off the shelf?

  - Time constraints for bespoke in-house model build given dry run time tables?

  - Risks of buying off the shelf vs building in house?

  - Premium Allocation Approach (PAA) eligibility – will you require a PAA or Building Block Approach (BBA)? Will you need some tactical solution going forward? How will you test new business?

  - Process for integration with overall model suite for reserving?

- Need to consider the starting position of calculations – IFRS 4 or SII?

- International groups are likely to need to reconcile IFRS 17 with US GAAP (esp. with US parent companies)

- Visibility of assumptions – IFRS 17 will require assumptions from various business functions to be held/tracked over time

- Reserving methodology - with all this granular reporting of profitability down to 'unit of accounts' will current reserving methodologies be useful, or will there be need to switch to other methods like triangle-free reserving?

Data & Systems (D&S) Changes Overall

Areas of change to be considered within Actuarial process include:

- Cashflows and Discounting

- Yield Curves and Discounting

- Analysis of change

- Onerous contracts

- Alignment of reserving to level of aggregation

- Risk adjustment

D&S Change review approach likely to include review templates covering each of these areas. Other areas could also be considered such as Reinsurance in order to develop a more complete set of D&S change gap analyses

D&S – Cashflows and Discounting

Section	
Change to current requirements	- Currently reserves held on an undiscounted basis (other than PPO and long tail type business) – under IFRS 17 premiums and liabilities may be required to be discounted - Cashflows may not exist for all premiums and claim types - Unearned premiums discounting is new concept
Issues	- Appropriateness of cash flow patterns – need to consider time of payment of reserved claims - Accident year and underwriting year patterns currently calculated - Need to consider payment patterns for Insurance and Reinsurance in groups (level of aggregation) that may not currently exist in current reserving - Can discounting calculation be brought into reserving software or would it have to be carried out in a separate module with output from reserving
Potential Solutions	- Consider change in reserving groups to better match the IFRS 17 groups under Level of Aggregation - Allocate using current IFRS 4 reserving – the amount of cash outflows does not change in total, however timing of payments may change
Uncertainties	- Appropriateness of payment patterns – any simplification used may need considered for materiality - Given this regards timing of cashflows, it may be appropriate to consider different discount rates in case low interest rate environment changes

D&S – Alignment of reserving to level of aggregation

Section	
Change to current requirements	- IFRS 17 requires that losses on loss-making contracts are recognised in advance and should not be offset by profitable contracts. The IASB recognizes this may not be practical at an individual contractual level, and so contracts may be grouped together by considering the different portfolios they are part of and the profitability. - This differs to current requirements were the need to recognise loss making business uses broad groupings. This allows underlying classes of business to offset each other hence reducing any potential for an Additional Unearned Risk Reserve. - For General Insurers applying a Premium Allocation Approach, you may assume no contracts in a portfolio are onerous at initial recognition unless the facts and circumstances indicate otherwise
Issues	- How is profitability in unearned business to be considered in robust manner? How often? Business may not have profitability metrics at the right segmentation currently - What are the facts and circumstances to be considered for PAA? - How are expenses to be allocated between the groups? - May need to consider new splits of business for example new business against renewal business? is the current system able to identify new policies? Is there a difference in claims experience or is it an expenses issue? - Additional complexities in consideration of reinsurance
Potential Solutions	- May consider aligning the reserving segmentation to the level of aggregation. Alternatives may be using the business plan or pricing loss ratios however need to consider robustness and auditability
Uncertainties	- What is appropriate level of facts and circumstances to consider when identifying groups of unprofitable contracts? Guidance is unclear and open to interpretation

D&S – Yield curves and Discounting

Section	

Change to current requirements	- The discount rate applied to the estimates of future cashflows should:
	   - Reflect the time value of money, the characteristics of the cashflows and the liquidity risk
	   - Be consistent with observable current market prices for financial instruments with cashflows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity
	   - Exclude the effect of factors that influence such observable market prices but do not affect the future cashflows of the insurance contracts.
	- Currently no requirement to discount under current IFRS standards (other than long tailed liabilities). Solvency II is prescriptive EIOPA rates other than some adjustments which may be eligible.

Issues	- If using Top Down approach, remove premium for credit losses from the yield on a reference portfolio - If using Bottom Up approach, add illiquidity premium to the risk free rate, which could be the Solvency II risk free curve prescribed by EIOPA. - Is risk free rate appropriate to apply? How can you estimate an appropriate illiquidity premium - Currently discounted liabilities? PPOs? Latent claims?
Potential Solutions	- Large Insurance Groups may consider linking in with Life teams to have consistent yield curves across group - Bermudan entities may consider use of BMA adjustment - General Insurers may consider risk free for use, considering illiquidity premium as immaterial
Uncertainties	- Appropriateness of using risk free even if "more prudent"

D&S – Analysis of Change

Section	
Change to current requirements	- Financial disclosures are currently required to give limited information on analysis of change between reporting periods, typically only including high level commentary on main drivers - IFRS 17 requires a more granular analysis of the drivers, showing more detail on change in liabilities, split by LRC and LIC, best estimate and risk adjustment as well as showing changes due to change in yield curve
Issues	- Detail required currently not built into reserving systems - Difficult to validate - Will require training for stakeholders and readers of accounts to understand and interpret - Change die to change in yield curve will add to complexity of adding discounting
Potential Solutions	- May need to start any reserving model changes early – complex and may require different inputs - Discounting solution may need to be separate to that of the reserving
Uncertainties	- Financial disclosures not prescribed so requirements may be open to interpretation

D&S – Risk Adjustment

Section	
Change to current requirements	- The risk-adjustment for non-financial risks is the compensation that an entity requires for bearing the uncertainty about the amount and timing of cash flows that arises from non-financial risk as the entity fulfils the insurance contracts. - Confidence level of liabilities to be disclosed
Issues	- Risk adjustment will need allocated appropriately in order to understand potential profitability of policies at inception - Functionality to calculate risk adjustment appropriately should be considered in reserving software or how it will be imported - Treatment of diversification benefit within groups
Potential Solutions	- Need to consider appropriate risk adjustment against the current risk appetite and investor expectations - How is reserve uncertainty currently considered? – reserve risk module run by capital team? uncertainty analysis by reserving team? may want to continue current process but will need to consider the auditability and governance
Uncertainties	- Consistent view of uncertainty may be a priority for firm between reserving and capital - Market convergence on approach yet to be seen

Can embedding of machine learning act as a key to IFRS 17?

14 October 2018

How can Machine Learning benefit us within IFRS 17?

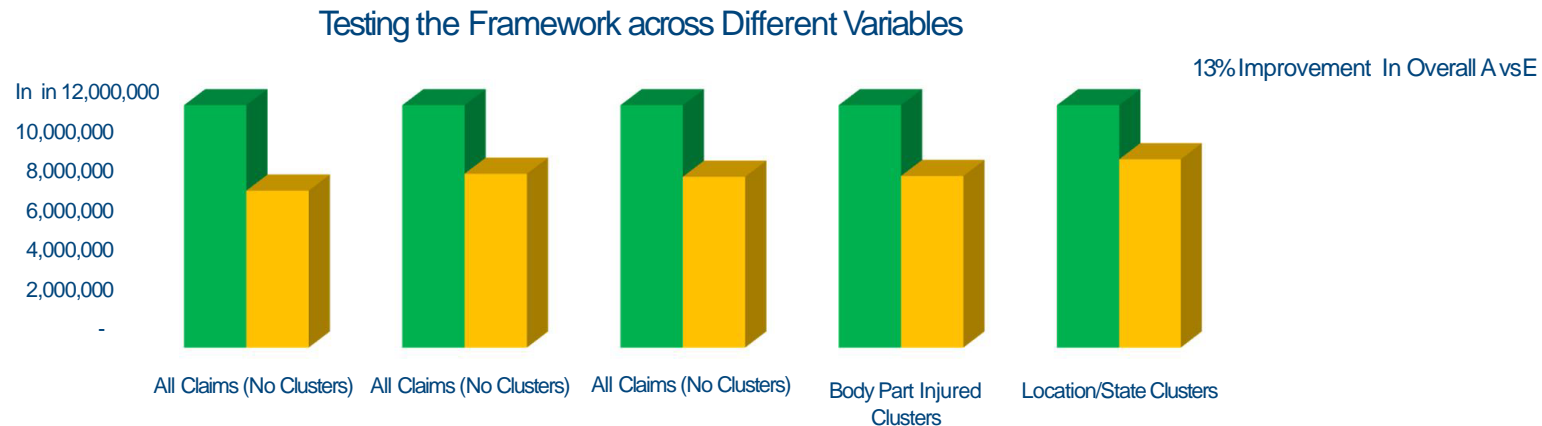| Estimate	Classical	Parameter	Depth Analysis	Monthly	Validation
•One emerging view is that the errors in the reserving estimates can be explained much better by using machine learning on granular claims data.	•The classical reserving methods use a one-size-fits-all approach, so it is difficult to learn from the actual vs expected. Machine learning could give insight here •Machine learning models use the claims and exposure features which affect the development, frequency and severity.	•Simply put, machine learning would use algorithms to estimate a different development factor for brain injury vs muscle injury •Parameter estimation involves learning from historical granular data, minimising the errors and back-testing the parameters	•It therefore allows for a more in-depth analysis of the actual vs expected, e.g. brain injuries may have deteriorated worse than expected	•Although machine learning models are computationally intensive and complex, they can be implemented very easily once built. •Importantly, they can be rerun frequently within small intervals (say monthly) to monitor the actual vs expected.	•Can machine learning be used to to validate and enhance traditional reserving techniques?

Strategy - Value

•Importantly, in this case machine learning models should be used to understand and explain the actual vs expected, and over time, help to develop more granular assumptions for traditional models such as loss ratios, development factors, frequency and severity.

Key points to consider

- The loss of potentially improved accuracy from ML by not fully utilising granular data where available

- Being pro-active in early engagement with the system requirements of IFRS 17 (including investigating possible ML approaches) could avoid greater costs nearer the IFRS 17 go live date

- IFRS17 is set to shake-up insurance accounting with the aim of providing transparent financial information about insurance contracts – adopting ML techniques could provide useful insights as part of this process

Example Case Study of ML improvement in Actual versus Expected fit reduction: Clustering results *(source: Granular Reserving Dialogistic in Machine Learning – Reserving Seminar – June 2018)*

ML Example framework was tested across all the 5 key variables below –

Testing the Framework across Different Variables

13% Improvement In Overall A vs E

In in 12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-

All Claims (No Clusters)　　All Claims (No Clusters)　　All Claims (No Clusters)　　Body Part Injured Clusters　　Location/State Clusters

Conclusion:
Actuarial role in IFRS 17 thought leadership vs system maintenance

Should actuaries take the lead in IFRS17?

- To optimise our skill set and add value to the business

- It's not cost effective for businesses to rely on actuaries to run repetitive mechanical exercises

- Our knowledge and expertise is better used in the design of systems and processes which can efficiently produce output

How can we avoid system maintenance?

- Be proactive and engage early

- Be involved with proof of concept and get the design right

- Get senior management buy in – demonstrate that solutions with less reliance on system maintenance by actuarial are more efficient and cost effective

Consider the key trade-offs in system design

- Consider factors to ensure IFRS 17 system design is optimal for business
    - Cost
    - Materiality
    - Time
    - Number of manual interventions vs automation
    - Scalability
    - Availability of appropriate in-house expertise
    - Quality of in-house processes and systems
    - Ability to leverage on Solvency 2 work

Enablers - Why Actuaries can be thought leaders?

- Our technical skills, knowledge, expertise and training

- Good understanding of data systems and other processes around the business

- Understanding of business and the nature of risks

- Ability to leverage on the work and lessons learned from Solvency 2

Roadblocks - Why do we end up with system maintenance?

- Some elements of IFRS 17 require actuarial input (Risk Margin, discounting …)

- Occasional lack of pragmatism

- Poor project and process negotiation skills

- Inadequate internal data systems/processes with skilled actuarial staff making up the gap

- Lack of in-house expertise in IT and finance functions

- Inability to cherry pick knowledge

Possible solutions to prevent actuarial processes/systems heading for the rocks (1)

- Be pro-active

- Perform an early gap analysis

- Assess materiality – BBA vs PPA

- Look to avoid spreadsheets - Automation, ML, advanced databases and data warehouses could all be part of the mix

- Utilising external consultants where there is a lack of in house expertise

- Use off the shelf IFRS solutions where available and tested

- Potentially leverage existing Solvency 2 processes

- Develop role of actuarial finance teams:
  - Finance teams exist whose role is to maintain actuarial calculations (such as Events not in data set (ENIDs), repetitive population of claim triangles, cash flow projections).
  - These teams do not consist of actuaries, but take models built by the actuarial function and run them/embed within the business for (for example) quarterly reporting.
  - The role of the Actuarial function then becomes to sign off these calculation engines and review their effectiveness.

- An alternative is a Finance Actuarial function embedded within Finance but consisting of actuaries and actuarial technicians

Possible solutions to prevent actuarial processes/systems heading for the rocks (2)

- Key principles to keep in mind for IFRS 17 implementation –
  - IFRS 17 may require data analytics / reserving at a more granular level
  - We need to be more pro-active rather re-active to achieve better accuracy of our results
  - This framework may be advanced using better visualisation of data & results
  - Need to use a blend of aggregate and granular assumptions
  - Need to use right software in the production environment

- IFRS17 is set to shake-up insurance accounting with the aim of providing transparent financial information about insurance contracts. Given in our previous shake-up with S2 world, actuarial will now need to be embedded into regular reserving processes (costs are going to be high).

Questions

Comments

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