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Long Tail Claims Deterioration – Management Responses and Actuarial Reactions

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Quote

“With casualty classes, you are three children in before you know your pregnant”

Unknown quote (possibly a Lloyds actuary)



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Agenda

- 1) Introduction and purpose
- 2) Recent long tail claim deteriorations
- 3) Typical management actions
- 4) Actuarial investigations to understand management actions
- 5) Reserving responses
- 6) Questions and comments



Introduction and Purpose

- Long tail classes pose reserving challenges at the best of times. At the worst of times they can have a big impact on an insurer's fortunes.
- The main purposes of this presentation are to discuss:
 - The typical management responses to long tail claims deteriorations.
 - How to investigate the impact of management's responses.
 - How to allow for the effects of these responses in actuarial reserving.
- All figures used in this presentation are dummy numbers.



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The Recent History of Claims Deteriorations

- Recent casualty claims deteriorations:
 - Italian Medical Malpractice: This affected several Lloyd's underwriters and European carriers.
 - Known responses: market exit, significant case estimate reviews
 - US Primary & Excess Casualty: This has recently led to significant strengthenings (Billions) in US carriers.
 - Financial Lines: US carriers and European carriers have experienced losses here.
 - Argentine Motor & Workers Compensation
 - Known responses: market exit, change in reserving approach and case estimation
- Less recent casualty claims deteriorations:
 - US Workers Compensation (California)
 - Known responses: re-underwriting, market exit
 - APH
 - Motor Liability (many jurisdictions)
 - Known responses: case estimate reviews, market exit, lobby for legislative changes



The Recent History of Claims Deteriorations – Key Takeaways

- Some common themes: rate adequacy, data availability, possible model error, legal involvement.
- A big claims deterioration is usually the start rather than the end of the period of bad experience.
- The strengthenings often do not look as bad when compared to the size of the reserves (which is sometimes done to 'mitigate' the shock value).
- Operational vs. experience deteriorations.
 - Were deteriorations due to poor claims experience or due to poor reserving/claims governance?
- Be very wary of 'taking' profits on excess classes for a long period of time.
- It is useful to get two or three opinions – this work is highly judgemental.
 - There is considerable uncertainty associated with these classes such that the definition of what constitutes a best estimate reserve is naturally broader.



Typical Management Actions – Case Estimate Review

Why/When used?

- Management can instigate a case estimate review to ascertain whether held case estimates are appropriate and if not to adjust them.
- The definition of 'appropriate' is open to interpretation which can sometimes lead to inadequate case estimation.

How

- Claims belonging to the class that deteriorated or classes that are similar in nature will have their case estimates reviewed to check if they are sufficient to pay for the expected settlement value of the value.
- Sometimes the review segmentation is by reporting/underwriting/accident year.
- Typically large claims will be reviewed as there are less of them and they are the most uncertain.

Management Expectations

- Management expect that case estimates will be updated to reflect the drivers of the observed deteriorations thus minimising the potential for future reserve strengthening.
- In general, management have an expectation that actuaries will incorporate this information in their reserving.



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Typical Management Actions – Case Estimate Review

- Changing case estimation practices are a key cause of reserving difficulty as many reserving models require consistent case estimation practices.
- This situation is exacerbated depending on the approach to reviewing case estimates. Two typical situations:
 - A one off review of case estimates to incorporate a specific and systemic deficiency in one particular element of case estimates.
 - A one off review of case estimates as above but also accompanying this is a change in the case estimation guidelines and philosophy.
- As part of an impending review an actuary should:
 - Be involved in the setting of review guidelines e.g. what is the scope of the review? Is it a one off review or the establishment of a new claims handling practice?
 - Influence the claim segmentation to be used e.g. if possible target it to specific cohorts.
 - Ensure that the claim numbers of reviewed claims are captured along with their pre and post review case estimates.
 - Get involved in reviewing some of the claims.



Typical Management Actions – Change in Reserving Approach

- In this presentation we are mainly discussing claims experience related deteriorations, however, this is sometimes interpreted as losses arising from strengthening in reserves.
- This can arise from claims deteriorations but it can also arise from reserving processes not adequately responding to claims deterioration trends.
 - Once this issue has been identified and rectified, this leads to a source of reserve deterioration.
- The typical management action is usually a combination of the following:
 - Replacing the reserving actuary
 - Wholesale review of reserving processes and governance
 - Commission an external reserve review
- This situation is likely to occur in classes that are cyclical in nature and where loss development trends are ‘creeping’ as opposed to sudden e.g. casualty classes.
- The expectation is to have no more reserving surprises.



Typical Management Actions – Reunderwriting the Portfolio

Why/When used?

- This approach would generally be used when the driver of claims deterioration has been the writing of poor performing accounts compared to historical accounts.
- Claims reserving may have been sufficient, however, the classes are loss making which would have led to higher reserves than expected.
- This is possibly due to applying assumptions based on historically good experience to poorer performing claims experience.

How

- Policies/Policy segmentations are analysed based on loss ratio (or some other metric). Poorer performing accounts are not offered renewals or offered renewal on terms which are consistent with their loss experience.
- This changes the portfolio mix such that future underwriting/accident years will potentially be subject to different claims experience to the existing history.

Management Expectations

- General management expectations are that there is improved underwriting year profitability for the overall portfolio.
- In reserving terms, there would likely be an expectation that the reserves would use assumptions that factor in the expected improved claims experience.



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Typical Management Actions – Other Actions

- Other typical actions include:

Run-off (Market Exit)

- This is a common approach that is used for a poor performing portfolio – it is quite simple in terms of limiting losses from future underwriting years.
- However, this approach doesn't mean that future claims deteriorations are reduced, instead just their severity is reduced. Consequently, this approach is adopted along with several other actions.

Retrospective Reinsurance

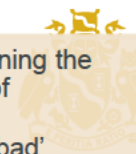
- Covers such as stop-loss or retro quota-shares can be purchased to limit future deterioration on the portfolio.

Sell the portfolio (Market Exit)

- Casualty portfolios that deteriorate are likely to incur high reserve risk capital charges. Whilst it may be possible to bring future deteriorations forward to minimise profit/loss surprises, these classes are likely to become unprofitable from an RoE perspective.
- One solution is to sell the portfolio to a specialist run-off operator e.g. a loss portfolio transfer.

Possible non-traditional solutions

- Appoint a third party claims settlement agent whilst still retaining the liability. Put in appropriate incentives to increase likelihood of profitable runoff.
- The banking approach – a good insurance company and a 'bad' insurance company?
- Capital markets solutions?



Actuarial Investigations of Management's Actions

- It is important to understand the changed reserving environment in order to be able to adjust the actuarial reserving approach in addition to validating the results of management's actions.
 - Market exit or run-off based responses require bespoke investigations (if necessary).
- Some important questions to answer as part of the investigations are:
 - What classes/claims were affected by management's actions?
 - Is the change one-off or is it the new-status quo?
 - Is the impact expected to be a prospective and/or retrospective change?
 - What are management's expectations?
 - Is the impact on frequency and/or severity?
 - How have the key claims trends changed? e.g. incurred cost development
 - Are the new case estimates reserved according to the new policy?
 - How do the new case estimates compare to recent claims settlements?
 - Is the retained business the better performing segment? By how much?
 - Do existing reserving methods still work?



Actuarial Investigations of Management's Actions – Claims File Review

- The claims file review can be successful in understanding the new claims environment and giving a tangible feel to the impact of management's actions.
 - We want to validate that the case estimates are being set to the new standard and the extent they reflect the expected settlement value.
- How to make the review successful:
 - Choose a mixture of open, settled and finalised claims. If possible choose claims that were and were not reviewed.
 - Review each claim with the 'claims manager' and the 'claims handler.'
 - Get the background story, the recent updates (i.e. before the review) and discuss how the new changes were implemented.
 - Review the claims system entries to see the timeliness of reviews.
- Other ways to validate the effects of the claims review are to commission a legal and/or external loss adjuster review of the affected claims.



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Actuarial Investigations of Management's Actions – Case Estimate Diagnostics

- Cumulative Paid to Incurred:
 - $\sum \text{Paid (AY,DY)} / \text{Incurred(AY,DY)}$. E.g.

AY/DY	0	1	2	3	4	5	6	7
2007	16%	22%	45%	57%	78%	65%	91%	85%
2008	12%	22%	39%	59%	78%	81%	74%	
2009	16%	46%	70%	70%	80%	60%		
2010	7%	29%	39%	45%	70%			
2011	12%	28%	50%	37%				
2012	11%	27%	35%					
2013	11%	21%						
2014	7%							

- There is a reduction in the ratio in the leading triangle. This can be an indicator of case estimate strengthening or potentially payment delay.
- Examining the historical and current ratio can provide a view of the case estimate strength relative to past experience and thus validate the changes made.



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Actuarial Investigations of Management's Actions – Case Estimate Diagnostics

- Case Estimate Development: This technique looks at the adequacy of case estimates being a predictor of future claims payments and settlement.
 - It is more powerful than incurred factors as it directly examines the development of case estimates. It is especially useful in the tail.
- $CED(t) = \{ \text{Case estimate}(t+1) + \text{Payments}(t, t+1) \} / \text{Case estimate}(t)$
- A ratio greater than 1 indicates that the case estimates set were not adequate and vice versa. E.g.

AY/DY	1	2	3	4	5	6	7
2007	179%	123%	183%	109%	222%	124%	238%
2008	198%	137%	127%	122%	137%	238%	
2009	178%	144%	182%	117%	152%		
2010	169%	147%	160%	156%			
2011	165%	117%	235%				
2012	169%	156%					
2013	217%						
2014							

Ideally we would see a one-off increase followed by a decrease and then stabilisation in the CED factors.

Consistent CED ratios > 100% indicates case estimates are inadequate. Latest diagonal experience shows case estimate review.



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Actuarial Investigations of Management's Actions – Average Finalised Cost

- Average Finalised Cost by AY/DY or PPCF:
 - $\sum \text{Finalised Payments} / \sum \text{Finalisations}$ e.g.

AY/DY	0	1	2	3	4	5
2009	14,662	27,822	38,643	57,641	88,172	105,422
2010	19,650	27,886	48,067	54,848	90,502	
2011	21,175	36,495	42,037	54,814		
2012	15,617	34,818	50,326			
2013	23,182	32,592				
2014	25,174					

- This can be a good diagnostic to assess whether there has been a deterioration in the cost of finalising claims pre and post management's actions.
 - If management's action were in response to bringing future claims deteriorations forward then all things being equal there should not be a deterioration in the averages.
 - If, for example, management reunderwrote the portfolio, then this should be evident by analysing the averages by UY/DY.



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Actuarial Investigations of Management's Actions – Changing the Cohort View

- A useful way to identify trends in claims experience arising from management's actions is to change the cohort under which the analysis is undertaken. Most common diagnostics can be analysed using the following cohorts:
 - Reporting year
 - Underwriting year
 - Accident year
 - Finalisation year.
- By reorganising the data, it is easier to find distinct segmentations in the claims experience, validate the impacts to specific categories of claims and quantify the impact of any change made.
 - These diagnostics are also useful exhibits in discussions with key stakeholders as they can be tailored to each stakeholders role e.g. underwriting year view for underwriting, reporting year for claims, accident year for finance.



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Actuarial Investigations of Management's Actions – Underwriting Focused Analysis

- One common management action when the portfolio is poorly performing (as opposed to deteriorating) is to re-underwrite the portfolio.
- A useful diagnostic used to identify whether this change is having an effect is to look at the incurred loss ratio relativity for the retained vs. non-retained portfolio (be careful of other changes such as exposure, T&C's, excess...).
- One key way to validate this analysis is to get hold of the pricing loss ratios. This will allow you to potentially validate the expected loss ratio differential from a prospective perspective.
- The underwriting risk loss ratio will also be a useful diagnostic to validate the impact of any changes.



Reserving Responses

- In this section, I will discuss the various reserving responses to management's actions:
 - We need a reserving response because the context that we undertake reserving has changed.
- Key considerations in formulating a response are:
 - Contextualisation
 - The initial response vs. the subsequent responses.
 - Management of expectations
 - Stakeholder interaction
 - The 'drip drip' effect.



Reserving Responses – Payments Based Methodologies

- Much of the discussion so far has been focused on management doing a review of case estimates. This will naturally lead to a discontinuity in trends that utilise case estimates.
- A common reserving response is to move to methodologies that rely on payments:
 - Payments based methods have a certain ‘truth’ about them.
- However, reserving actuaries tend to not use payments based methods in the more recent AY/UY’s due to immaturity of the projection point.
 - However, it is often in these periods where there are quite a bit of case estimates and/or actuarial reserves remaining.



Reserving Responses – Payments Based Methodologies

- Potential techniques around these limitations are:
 - Project using a frequency/severity methodology and select severity assumptions from earlier periods. Trend and on-level to apply to future periods.
 - Use a combination of the paid projection and a BF model derived using a paid projection in the more recent UY/AYs.
- Another key way to use a payments based methodology is to restate the cohorts of experience.
 - For example, if management actions only influence claims that are reported post date X, then we could move from an UY/AY based projection to one based on reporting year. This would allow for a clear segmentation in the projection cohorts.
- Although payments are a source of truth, some management actions can lead to changes in speed of claims payments.
 - This might require data restatement.



Reserving Responses – Retaining Case Estimates

- Even though case estimates may have changed, there are valid reasons for retaining the use of case estimates in actuarial reserving:
 - They contain the best available information on the value of future claims settlements.
 - There is not enough or accurate data to use other methods.
 - There is an expectation (rightly or wrongly) that the new ‘information’ incorporated in the revised case estimates should be used in actuarial reserving.
- Some techniques to enable the continued use of case estimates based methods are:
 - Restatement of triangular experience. E.g. the Berquist-Sherman method
 - Using a different projection point
 - Credibility weighted assumption selection.



Reserving Responses - Retaining Case Estimates

- BS method relies on restating case estimates from the point in time that case estimates were felt to be a good predictor.

Case estimates per active claims ('000)

AY/DY	0	1	2	3	4	5	6	7
2007	3.94	19.71	25.81	47.41	41.50	135.34	66.83	197.72
2008	5.73	31.75	51.79	64.49	62.90	93.68	270.81	
2009	6.69	22.56	24.90	48.27	55.76	124.35		
2010	4.88	19.80	36.44	71.79	84.33			
2011	4.70	19.59	24.67	63.23				
2012	5.79	21.40	45.00					
2013	5.47	34.12						
2014	6.67							
Trend	2%	2%	2%	2%	2%	2%	2%	2%

Trend in case estimates per active claim across accident years.

- Trends can be estimated using geometrical growth.



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Reserving Responses - Retaining Case Estimates

- The active claims along with the restated case estimates per active claim are used to backfill the triangle. These case estimates are expected to reflect the case estimates that would have been held if they had been estimated according to the strength/approach of the selected period.

Case Estimate Per Active Claim (de-trended) ('000)

AY/DY	0	1	2	3	4	5	6	7
2007	3.55	17.76	23.26	42.72	37.40	121.94	60.22	178.15
2008	5.24	29.03	47.37	58.98	57.52	85.67	247.67	
2009	6.21	20.95	23.11	44.80	51.76	115.43		
2010	4.59	18.66	34.33	67.64	79.45			
2011	4.50	18.73	23.59	60.47				
2012	5.62	20.77	43.68					
2013	5.39	33.62						
2014	6.67							

New Case Estimate using BS & Active claims ('000)

AY/DY	0	1	2	3	4	5	6	7
2007	784	1,207	1,000	1,153	622	1,216	360	640
2008	1,107	1,829	1,847	1,445	860	768	1,332	
2009	1,541	1,634	1,132	1,383	975	1,304		
2010	1,112	1,404	1,602	1,988	1,425			
2011	1,148	1,482	1,157	1,869				
2012	1,572	2,077	2,621					
2013	1,369	2,488						
2014	2,000							

Choice of trend assumption is key lever



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Reserving Responses - Retaining Case Estimates

- Depending on management's actions the starting projection point could be changed in combination with adjustment to projection assumptions. This can help with leading diagonal issues.
- E.g. Lets assume that case estimates were revised to bring forward future deteriorations. However, the triangle has sufficient historical and consistent experience of these deteriorations. If we were to project off the latest diagonal, the reserves would potentially be overestimated. Furthermore, the assumptions are now distorted by the experience of the latest diagonal. Potential solution:

AY/DY	0	1	2	3	4	5	6	7
2007	1,030	1,720	2,030	2,950	3,070	3,910	4,240	4,790
08	1,380	2,560	3,290	3,840	4,190	4,540	5,697	
09	1,970	3,270	4,040	5,040	5,300	5,845		
10	1,270	2,090	2,790	3,810	4,992			
11	1,370	2,150	2,410	4,044				
	1,820	2,930	4,130					
13	1,560	3,185						
2014	2,220							

Start the projection using this diagonal

Health Warning:
Important to validate and backtest the resultant reserves as this is a highly judgemental approach

Ex 1

1.67	1.23	1.29	1.06	1.16	1.08	1.13
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Exclude the latest diagonal to have 'clean' assumptions



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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.



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