PAST : Reserving Cycle – Running Out of Reserves – Where are the Profits Coming From ?

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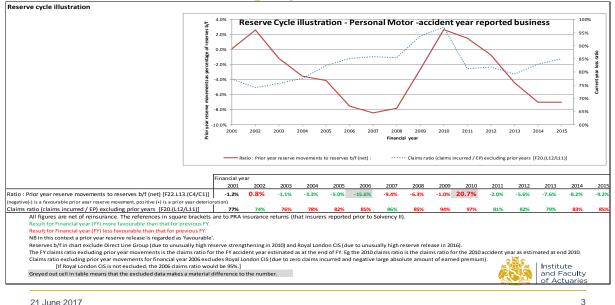
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PAST : Reserving Cycle

Key Messages from this session

- <u>What is it</u>: Observed cyclical patterns of prior year reserve movements.
- <u>Why is it important</u>: Reserving cycle means results (change to P&L account or change to basic own funds) are less stable than could be.
- <u>How we are addressing it today</u>:
  - Look at historical reserving cycles.
  - Consider use of diagnostics intended to improve accuracy of reserves and reduce magnitude of a reserving cycle.
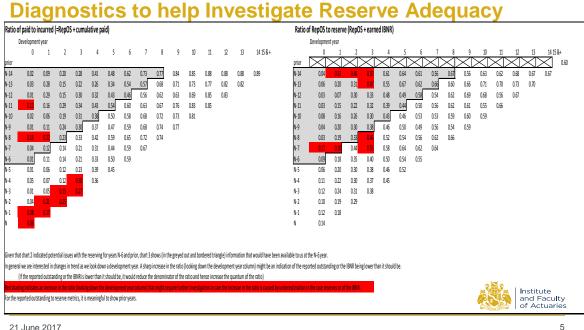 - Draw conclusions on how we might improve the accuracy of our reserving.

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What is the reserving Cycle

Reserve cycle illustration

Reserve Cycle illustration - Personal Motor -accident year reported business

Financial year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ratio : Prior year reserve movements to reserves b/f (net) [F22.L13.(C4/C1)]	-1.2%	0.8%	-1.1%	-3.3%	-5.0%	-15.6%	-9.4%	-6.3%	-1.0%	20.7%	-2.0%	-5.6%	-7.6%	-8.2%	-9.2%
(negative(-) is a favourable prior year reserve movement, positive (+) is a prior year deterioration)															
Claims ratio (claims incurred / EP) excluding prior years [F20.(L12/L11)]	77%	74%	76%	78%	82%	85%	86%	85%	94%	97%	81%	82%	79%	83%	85%

All figures are net of reinsurance. The references in square brackets are to PRA insurance returns (that insurers reported prior to Solvency II).
Result for Financial year (FY) more favourable than that for previous FY.
Result for Financial year (FY) less favourable than that for previous FY.
NB In this context a prior year reserve release is regarded as 'favourable'.
Reserves b/f in chart exclude Direct Line Group (due to unusually high reserve strengthening in 2010) and Royal London CIS (due to unusually high reserve release in 2016).
The FY claims ratio excluding prior year movements is the claims ratio for the FY accident year estimated as at the end of FY. Eg the 2010 claims ratio is the claims ratio for the 2010 accident year as estimated at end 2010.
Claims ratio excluding prior year movements for financial year 2006 excludes Royal London CIS (due to zero claims incurred and negative large absolute amount of earned premium).
  [If Royal London CIS is not excluded, the 2006 claims ratio would be 95%.]
Greyed out cell in table means that the excluded data makes a material difference to the number.

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An alternative way to look at reserving cycle

Development of estimated ultimate claim cost (expressed as percentage of estimated ultimate claim cost at end year N)

	Development year																Estimated ultimate loss ratio (ULR) at end year N
prior	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 & +	
N-14	41%	78%	78%	84%	111%	114%	115%	112%	104%	102%	101%	100%	100%	101%	100%		more than 80%
N-13	84%				99%	109%	113%	113%	113%	109%	107%	103%	99%	100%			more than 80%
N-12	134%	126%	129%	121%	111%	120%	119%	114%	101%	101%	102%	95%	100%				less than 80%
N-11	147%	120%	149%	133%	116%	111%	107%	106%	103%	98%		100%					less than 80%
N-10	123%	160%	137%	138%	126%	119%	114%	111%	105%	104%	100%						less than 80%
N-9	72%	124%	118%	120%	116%	118%	119%	104%	101%	100%							less than 80%
N-8	53%	74%	84%	87%	100%	92%	99%	98%	100%								more than 80%
N-7	55%				111%	107%	104%	100%									more than 80%
N-6	62%	91%	98%	110%	96%	98%	100%										less than 80%
N-5	66%	109%	117%	104%	102%	100%											less than 80%
N-4	74%	115%	102%	100%	100%												less than 80%
N-3	71%	99%	104%	100%													less than 80%
N-2	55%	94%	100%														less than 80%
N-1	58%	100%															less than 80%
N	100%																less than 80%

Figures are earned by year N, gross of reinsurance, and based on real data. The data is anonymised (in particular quantum and loss ratios are not shown)
Red shade indicate years where it has taken time to recognise the ultimate cost and thus reserve deterioration has been experienced
Blue shade indicates years where a prudent estimate of ultimate cost has been set and thus reserve release (profits) have been made year-on-year
This data is reported by underwriting year and therefore the first development year (greyed out text) has little meaning as the business is not fully earned by end of the first development year.
Estimated ultimate claim cost = cumulative paid + RepOS + earned IBNR.
Estimated ULR = estimated ultimate claim cost / earned premium.
Orange shaded is where the estimated ULR at end year N is more than 80% and therefore the underwriting year would appear to be loss making.

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Diagnostics to help Investigate Reserve Adequacy

Ratio of paid to incurred (=RepOS + cumulative paid)

Development year

prior	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 &+
N-14	0.02	0.09	0.20	0.28	0.41	0.48	0.62	0.73	0.77	0.84	0.85	0.88	0.88	0.88	0.89	
N-13	0.03	0.28	0.15	0.22	0.26	0.34	0.54	0.57	0.68	0.71	0.73	0.77	0.82	0.82		
N-12	0.01	0.29	0.15	0.30	0.32	0.43	0.46	0.56	0.62	0.63	0.69	0.85	0.83			
N-11	0.12	0.16	0.29	0.34	0.43	0.54	0.60	0.63	0.67	0.76	0.83	0.85				
N-10	0.02	0.06	0.19	0.31	0.38	0.50	0.58	0.68	0.72	0.73	0.81					
N-9	0.01	0.11	0.24	0.30	0.37	0.47	0.59	0.68	0.74	0.77						
N-8	0.18	0.23	0.23	0.33	0.42	0.59	0.65	0.72	0.74							
N-7	0.04	0.12	0.14	0.21	0.31	0.44	0.59	0.67								
N-6	0.01	0.11	0.14	0.21	0.33	0.50	0.59									
N-5	0.01	0.06	0.12	0.23	0.39	0.45										
N-4	0.05	0.07	0.12	0.30	0.36											
N-3	0.01	0.05	0.15	0.27												
N-2	0.04	0.21	0.25													
N-1	0.08	0.17														
N	0.06															

Ratio of RepOS to reserve (RepOS + earned IBNR)

Development year

prior	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 &+ 0.60
N-14	0.04	0.32	0.48	0.51	0.61	0.64	0.61	0.56	0.67	0.56	0.63	0.62	0.68	0.67	0.67	
N-13	0.06	0.20	0.31	0.47	0.55	0.67	0.62	0.66	0.60	0.66	0.71	0.70	0.73	0.70		
N-12	0.03	0.07	0.30	0.33	0.48	0.49	0.58	0.54	0.62	0.69	0.68	0.56	0.67			
N-11	0.03	0.15	0.22	0.32	0.39	0.44	0.50	0.56	0.62	0.61	0.55	0.66				
N-10	0.08	0.16	0.26	0.30	0.43	0.46	0.53	0.53	0.59	0.60	0.59					
N-9	0.04	0.20	0.30	0.38	0.46	0.50	0.49	0.56	0.54	0.59						
N-8	0.03	0.19	0.33	0.46	0.52	0.54	0.56	0.62	0.66							
N-7	0.17	0.36	0.44	0.52	0.58	0.64	0.62	0.64								
N-6	0.09	0.18	0.35	0.40	0.50	0.54	0.55									
N-5	0.06	0.20	0.30	0.38	0.46	0.52										
N-4	0.11	0.22	0.30	0.37	0.45											
N-3	0.12	0.24	0.31	0.38												
N-2	0.10	0.19	0.29													
N-1	0.12	0.18														
N	0.14															

Given that chart 2 indicated potential issues with the reserving for years N-6 and prior, chart 3 shows (in the greyed out and bordered triangle) information that would have been available to us at the N-6 year.

In general we are interested in changes in trend as we look down a development year. A sharp increase in the ratio (looking down the development year column) might be an indication of the reported outstanding or the IBNR being lower than it should be.

(If the reported outstanding or the IBNR is lower than it should be, it would reduce the denominator of the ratio and hence increase the quantum of the ratio)

Red shading indicates an increase in the ratio (looking down the development year column) that might require further investigation in case the increase in the ratio is caused by underestimation in the case reserves or of the IBNR.

For the reported outstanding to reserve metrics, it is meaningful to show prior years.

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Diagnostics on Claim Numbers and Average costs

RepOS per RepOS claim £000   F32.C5/C2

Development year

	0	1	2	3	4	5	6	7	8	9	>10
2001	1,436	4,718	11,627	9,320	9,336	34,797	53,942	77,494	147,753	170,171	
2002	1,408	7,013	8,410	9,024	39,195	45,692	41,676	34,826	44,703	21,869	
2003	1,659	2,948	7,916	25,250	41,156	46,182	77,054	199,096	177,514	359,838	
2004	1,997	5,692	13,697	26,867	53,119	80,487	175,261	152,727	269,375	294,698	
2005	2,088	6,041	12,799	27,592	53,177	87,153	121,856	129,410	272,503	367,259	
2006	1,815	5,292	13,784	33,975	63,071	116,468	220,798	564,597	744,553	971,951	
2007	1,974	7,623	19,339	31,173	65,624	135,886	313,562	510,790	692,325		
2008	2,198	9,415	18,690	36,824	75,617	136,951	295,161	402,548			
2009	2,652	9,099	21,981	42,987	65,193	100,205	180,033				
2010	2,479	9,316	22,933	36,837	61,838	81,047					
2011	6,325	5,904	17,519	29,910	45,247						
2012	2,592	5,615	9,389	17,485							
2013	2,846	5,003	10,329								
2014	3,416	7,633									
2015	3,424										

Incurred per reported claim £000   F32.(C3+C4+C5)/(C1+C2)

Development year

	0	1	2	3	4	5	6	7	8	9	>10
2001	1,217	1,338	1,313	1,298	1,382	1,329	1,336	1,341	1,337	1,362	
2002	1,238	1,448	1,443	1,482	1,436	1,445	1,443	1,386	1,432	1,438	
2003	1,291	1,429	1,403	1,404	1,416	1,407	1,367	1,471	1,477	1,655	
2004	1,306	1,430	1,378	1,404	1,430	1,364	1,468	1,497	1,694	1,564	
2005	1,462	1,320	1,325	1,339	1,295	1,390	1,414	1,547	1,429	1,446	
2006	1,355	1,502	1,529	1,523	1,686	1,695	1,897	1,745	1,746	1,746	
2007	1,426	1,645	1,640	1,757	1,794	2,059	1,908	1,915	1,917		
2008	1,472	1,667	1,784	1,841	2,076	1,945	1,990	1,973			
2009	1,587	1,923	2,018	2,298	2,086	2,106	2,149				
2010	1,637	1,958	2,276	2,096	2,090	2,091					
2011	2,261	1,916	2,082	2,105	2,096						
2012	2,013	2,254	2,267	2,259							
2013	2,091	2,035	2,070								
2014	2,317	2,407									
2015	2,455										

Publicly available information, PRA insurance returns for Direct Line Group companies (UK Ins, Churchill, Direct Line)

Red shading indicates a change in trend (down the development year column) or a change over development years that might prompt a firm to investigate to gain comfort on the reported outstanding claims

The low average RepOS for the 2002 accident year at development years 7 to 9 appear incorrect and therefore arte greyed out. (For the 2002 AY, the RepOS c/f reported at end of financial years 2009 to 2011 appears low, the number of claims outstanding reported at end 2011 appears high. The author does not know the reason.)

Yellow shading for a diagonal indicates an usual development for a specific calendar year

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Conclusions

- Beware of potential causes [within your control] of underestimating future cost of claims that have already occurred, in particular:
    - Not considering other measures of exposure [where practical] in addition to the premium you charged to estimate your future obligations. (In particular over relying on a-prior loss ratios.)
    - Not properly understanding the business you have written.
    - Not properly understanding your claims handling processes.
- Check that any changes in diagnostics (eg: ratio of paid to incurred, ratio of RepOS to reserve [or undiscounted claims provision], average claim size) can be explained.
- Use numbers of claims [where practical], including projections of claim numbers.

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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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