

Challenges facing the reserving actuary in reinsurance

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Chris Bozman, FCAS, MAAA

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Challenges for the Reinsurance Reserving actuary

- Initial Expected Loss Ratios
- Development Factors
- Methods

Initial expected loss ratio assumptions are a key consideration for the reserving actuary

- IELRs for most recent underwriting years given heavy weight in common reserving approaches to casualty reinsurance
- Generally derived from roll-up of individual pricing selections
- Strong reserving processes includes second guessing of aggregate pricing picks, with consideration given to:
 - Historical track record for class of business
 - Quality of data available to pricing actuaries
 - Consideration of market cycle impacts
 - Industry benchmark loss ratios, if available

Recommendations regarding use of IELRs

- Update IELRs at the end of the underwriting year based on information in the renewal submission:
 - actual rate change versus expected rate change used in pricing
 - actual premium distribution by line (for multi line treaties)
- Review IELRs by year to ensure that relationship between underwriting years is sensible
- Continually monitor results for signals that original IELRs may be biased
 - If Actual > Expected across all casualty classes, this may be more than noise

Benchmark Development patterns are very important in reinsurance reserving contexts

- Benchmark development patterns
 - Useful in cases with volatile data/small volume
 - Particularly useful for excess of loss business
 - Useful if mix is changing over time
 - E.g. historical data in triangle includes high attachment point, high limit business in older years, lower attachment business in more recent years.
 - Best source of tail factors for casualty lines
 - In treaty by treaty analysis, different benchmark patterns can be utilized for different treaties

Sources – Reinsurance Association of America (RAA) historical development studies

- RAA Casualty Loss Development Study
 - Excess of loss development history published for WC, GL, AL, and Med Mal
 - Paid and reported loss development by accident year, with development history dating back to 1960's/1970's
 - Data supposedly “cleansed” of commutation activity, old asbestos, pollution, and mass tort claims
 - No premiums are included, so cannot be used for loss ratios
 - Subset of reporting companies also provide development history by attachment point range, with triangles going back to accident year 1986
 - There are questions as to credibility of range data due to relatively low volume of data
 - Other splits
 - Treaty vs. Fac
 - CM vs. Occurrence for 13 evaluation points

Sources – Reinsurance Association of America (RAA) historical development studies (cont'd)

- Considerations with using RAA Data as Benchmarks for specific companies
 - Differences in ACR reserving practices by company
 - Changes in company/industry reserving practices over time for lines such as WC
 - Impact of inflation on historical observed data as compared to potential future inflation
 - Changes in coverages over time, mix of CM vs. occurrence for GL & Med Mal
 - Differences in development by stage of market cycle

Other sources – Schedule P, Global Loss Triangles, NCCI, ISO

- Schedule P for reinsurers
 - Useful for pro-rata, which gets reported by reinsurers into the original Sch P line
 - May contain pro-rata of excess business (e.g. umbrella) – difficult to know how prevalent this is.
 - Often questions regarding split to AY on pro-rata treaties
 - Can be used for patterns and loss ratio benchmarks
- Schedule P for primary companies
 - Can be used to develop benchmark primary patterns, which can be lagged for pro-rata
 - Ceded loss ratios can be used to help assess reinsurance loss ratios, but complications exist
 - Schedule P ceded is mix of pro-rata and excess
 - May contain offshore cessions to affiliates
 - Questions as to accuracy of booked ceded IBNR by line and AY in some cases

Other sources – Schedule P, Global Loss Triangles, NCCI, ISO (cont'd)

- Global Loss Triangles
 - Granularity of reported data varies widely
 - May be a good source of non-U.S. development data
 - Also can be used for loss ratio benchmarks, as premiums and booked ultimates frequently included
- NCCI, ISO
 - Can be used for primary benchmark patterns which can be lagged for pro-rata treaties
 - NCCI has looked at excess development
 - Excess development also available from ISO

Significant Challenges in using benchmarks

- Market Cycle Impact
 - Clearly there is an impact on loss ratios
 - We have also observed an impact on development (see following slides containing information from 2009 RAA study)
 - What are the causes and how should this be reflected in the benchmarks?

RAA data suggests possible market cycle effect on loss development – WC report to report factors

Accident Year	1	2	3	4	5	6	7	8	9	10	11
1988						1.082	1.061		1.022	0.998	1.001
1989					1.062	1.044		0.989	0.996	1.010	0.969
1990				1.092	1.095		0.977	0.998	1.037	0.992	1.005
1991			1.264	1.142		1.032	1.052	1.041	1.023	1.057	1.019
1992		1.255	1.060		1.031	1.052	1.016	1.041	1.102	1.057	1.030
1993	2.689	1.305		1.108	1.113	1.043	1.014	1.096	1.091	1.008	1.020
1994	2.321		1.124	1.112	1.050	1.067	1.089	1.060	1.037	1.085	1.107
1995		1.397	1.198	1.115	0.974	1.059	1.137	1.094	1.129	1.059	1.032
1996	2.224	1.299	1.193	1.072	1.122	1.153	1.123	1.064	1.096	1.076	1.032
1997	2.345	1.090	1.145	1.176	1.162	1.150	1.118	1.088	1.066	1.058	1.068
1998	2.451	1.192	1.468	1.248	1.168	1.131	1.102	1.111	1.084	1.127	
1999	2.129	1.526	1.334	1.202	1.169	1.154	1.088	1.060	1.091		
2000	2.471	1.385	1.370	1.309	1.174	1.161	1.103	1.099			
2001	2.192	1.331	1.472	1.267	1.175	1.145	1.092				
2002	2.342	1.387	1.465	1.230	1.176	1.097					
2003	1.853	1.213	1.178	1.111	1.110						
2004	2.645	1.278	1.226	1.166							
2005	2.460	1.208	1.093								
2006	2.258	1.243									
2007	2.286										
2008											

Straight averages

1988-96	2.411	1.314	1.168	1.107	1.064	1.066	1.059	1.048	1.059	1.038	1.024
1997-01	2.318	1.305	1.358	1.240	1.170	1.148	1.101	1.089	1.080	1.093	1.068
post 2001	2.307	1.266	1.240	1.169	1.143	1.097	NA	NA	NA	NA	NA

RAA data suggests possible market cycle effect on loss development – GL report to report factors

Accident Year	1	2	3	4	5	6	7	8	9	10	11
1988						1.038	1.047	1.006	0.992	1.003	1.007
1989					1.115	1.015	1.015	1.037	1.002	1.013	1.005
1990				1.148	1.077	1.090	1.039	1.008	1.028	0.995	1.005
1991			1.272	1.112	1.154	1.040	1.011	1.015	0.999	1.011	1.015
1992		1.714	1.451	1.181	1.136	1.065	1.028	1.007	1.021	1.015	1.008
1993	3.175	1.732	1.238	1.232	1.116	1.048	1.047	1.024	1.013	1.003	1.020
1994	3.639	1.845	1.323	1.142	1.133	1.080	1.054	1.013	0.995	1.011	1.008
1995	4.241	1.662	1.387	1.239	1.113	1.070	1.029	1.061	1.033	1.006	1.002
1996	2.898	1.780	1.364	1.263	1.113	1.050	1.043	1.032	1.021	1.050	1.005
1997	3.312	1.960	1.451	1.244	1.117	1.069	1.029	1.052	1.015	0.996	1.013
1998	3.516	2.024	1.386	1.227	1.155	1.131	1.092	1.019	1.044	1.203	
1999	4.061	1.767	1.430	1.269	1.127	1.063	1.042	1.039	1.011		
2000	3.491	2.156	1.415	1.305	1.163	1.090	1.026	1.036			
2001	4.186	2.163	1.515	1.235	1.120	1.064	1.045				
2002	4.146	1.990	1.410	1.195	1.135	1.064					
2003	3.768	1.950	1.385	1.289	1.132						
2004	3.740	2.191	1.223	1.206							
2005	3.734	1.707	1.448								
2006	3.870	1.543									
2007	2.158										
2008											

Straight averages

1988-96	3.488	1.747	1.339	1.188	1.120	1.055	1.035	1.023	1.011	1.012	1.008
1997-01	3.713	2.014	1.439	1.256	1.136	1.083	1.047	1.036	1.023	1.100	1.013
post 2001	3.569	1.876	1.367	1.230	1.134	1.064	NA	NA	NA	NA	NA

Significant Challenges in Using Benchmarks – Credibility Considerations

- How much credibility should be given to company data as opposed to the benchmark?
 - Frequently company development data can be indicative of directional differences versus benchmark
 - Such differences can be extrapolated to tail
 - Understanding of applicability of benchmark is an important consideration
 - Near the tail, over-reliance on company data may often understate potential development
 - For example with GL data, the tail is often driven by a small number of development intervals with significant development, combined with many intervals with no development

Significant Challenges in Using Benchmarks – Credibility Considerations (cont'd)

- Key considerations for evaluating how much weight to give company data vs. benchmark
 - Volume of data underlying company data (consider volume at 100% share as well)
 - How well does the benchmark fit the company data at earlier maturities?
 - How much variation exists around the benchmark?
 - More variation around benchmark means higher probability that company data is from same underlying distribution as benchmark data

Challenges – What Methods to use?

- Traditional reinsurance reserving methods heavily reliant on IELRs/B-F methodologies for casualty lines
 - Selections by year often based on rules of thumb and professional judgment
- Potential enhancements to method selection
 - Hindsight review of accuracy of methods at certain maturities is useful
 - Qualitative assessment as to the robustness of IELRs aids in determination of how much weight to give experience as it emerges
 - Consider using a Stanard-Buhlmann method at the line/class level
 - More responsive to emerged experience than B-F method